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ORIGINAL ARTICLES.

AMETROPIA IN MICROSCOPIC WORK.

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Every worker with the microscope who has a refractive error which compels him to wear correcting glasses, has probably tried to wear them in his work, but finding them inconvenient has discarded them to discover that the view of the field was apparently just as good without as with them. A moment's consideration of the optical principles of the microscope will show that in cases of myopia, hypermetropia and presbyopia, glasses are totally unnecessary, as every one is probably aware. Only a very slight movement of the fine adjustment is necessary to throw the image to a point where the person can see it clearly. For convenience the eye-piece and objective may each be considered as a single convex lens, and Fig. 1 shows that the objective forms an image b just within the focus y of the eye-piece, the object a being just beyond the focus x of the objective.

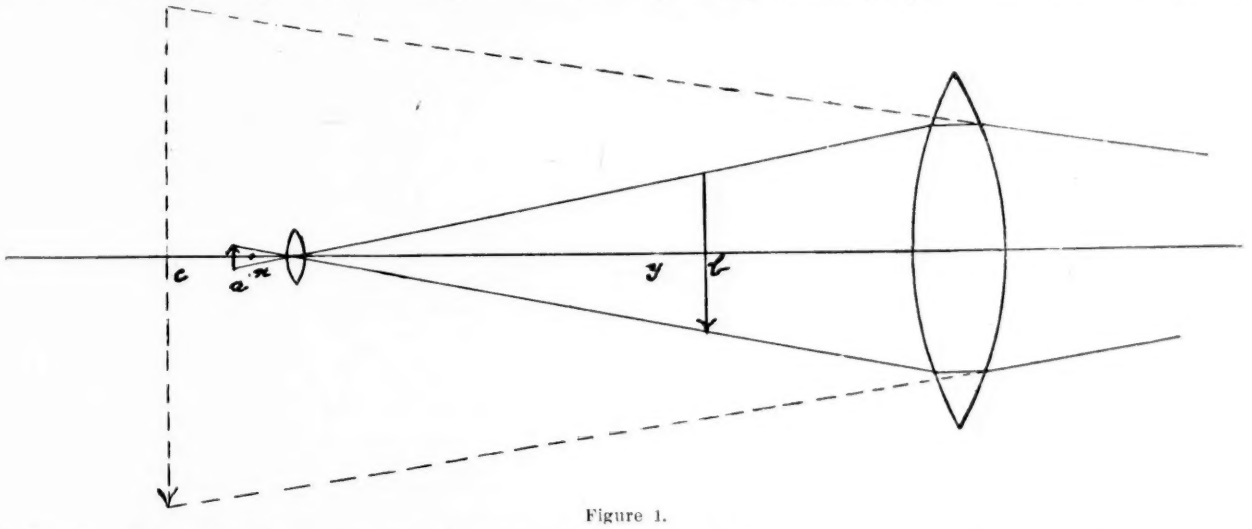

Figure 1.

The eye-piece enlarges the image b, throwing it back to c, just like a common magnifying glass. Most persons unconsciously use their accommodation while looking through the microscope. Though it is said that the image c is usually placed about twelve to fourteen inches from the observer's eye, it is quite probable that the majority of persons by adjusting the instrument cause it to come still nearer; at least as near as the slide. A myopic person brings c at least to his far point, and perhaps nearer, so that he exerts his accommodation. The hypermetrope also uses his accommodation and the presbyope may, if he has any power in this direction, but for both, the image can not be brought nearer than the nearest point of distinct vision without glasses when the full accommodation is in play.

If a person with myopia of high degree, say 8 D., uses the microscope, he must have c within his far point, approximately within five inches of his eye, b must then be brought nearer the eye-piece by screwing down the microscope so that a is nearer to the focus of the objective. The nearer a approaches x the farther b recedes from x and y, and the more b recedes from y the nearer c approaches the eye-piece.

The normal eye with the accommodation entirely relaxed, or the presbyopic eye which has no power of accommodation whatever, must have the image b at the focus y, so that c may be at infinity, and rays of light from any one point will enter the eye parallel. The hyperopic eye which is also presbyopic will have b outside of y, so that the image c will be at the negative far point behind the observer's head and the rays of light converging. These movements can be deduced from a study of the elementary rules of optics. For any of the above conditions accommodation is not necessary, as the virtual image can be thrown to the observer's far point, but as already stated most observers do use their accommodation in microscopic work, the image being thrown within their far point.

If the microscope is fixed so that the above myope of 8 D. has a distinct view of the field, let us see what change is necessary in order to give a perfectly clear picture to a person whose refractive error or defect of accommodation renders him unable to see anything nearer than four feet; c must now be more than four feet from the eye-piece; to accomplish this b must be moved quite near to y and for this purpose a must be moved farther from x, that is, the microscope must be raised from the slide; b is so near the focus of the eye-piece that a slight movement to or from the focus, causes c to make a very marked movement

from or towards the lens. As *b* is so much farther away from the objective than *a*, its position suffers a very marked change for the slightest movement of *a* towards or from the objective. Consequently the most minute movement of the microscope towards the object, makes a very marked change in the position of *c*. How slight a movement of the microscope is necessary may be judged from the following approximate estimates. Supposing the instrument is adjusted for the myope of 8 D., the tube is moved upwards by the following turns of the fine adjustment, in order to make clear vision for a person whose nearest point of clear vision is about four feet.

Objective.	Turns of Fine Adjustment.
2 inches	About 965 degrees
¾ inches	About 180 degrees
1-5 inches	About 10 degrees
1-12 inches immersion	A mere touch, probably less than 3 degrees

In the high powers the change is very slight, as above figured, because *a* is so near the focus of the objective, that a tiny movement would send *b* to infinity.

The actual conditions of the microscope are far too complex even to allude to here, but the above demonstrations, approximate though they be, seem sufficient for the purpose of following out the movements of the image *c* caused by movements of the objective to or from the object.

Though the number of diameters of enlargement of any combination of lenses, varies according to the distance at which the observer thinks he sees the image, it also varies according to the state of the observer's refraction. The above shows that for the same combination of eye-piece and objective, there is not the same amount of enlargement of the image for the myope as for the hypermetrope. The image *c* appears slightly larger to the myope and really is larger. As *c* must be near the eye, *b* must be much farther from the objective than for the hypermetrope. Moving *b* from the objective by moving *a* towards the objective, increases the size of *b* very markedly, particularly in the higher powers, where the distance of *a* from the objective is so small in comparison to the distance of *b* from the objective. To be sure there is less enlargement caused by the eye-piece when *c* is very near, but the eye-piece has so little influence on the total enlargement as compared with the effect of the objective, that it can safely be discarded in this demonstration. Hence there is a positive advantage in the myope using the microscope without his glasses.

For the astigmatic the conditions are entirely different. *A priori* one would suppose that after focusing the instrument for lines parallel to his axis of greatest refraction, he will not be able to see lines at right angles to these without altering the position of the instrument and throwing the first set out of view. We would judge, then, that the astigmatic observer can not obtain a distinct view of the objects of the field without using a correcting cylinder equal to his own astigmatism, and that unless he does this he will have an erroneous idea of the thickness of the object, from the very fact that he is required to throw the instrument up and down by the fine adjustment in order to see the lines lying in the various angles from his own meridian of least, to that of greatest refraction. This is true to but a limited extent. In astigmatism of 1 to 2 D., there does not appear to be any appreciable difference in distinctness whether the glasses are used or not, except perhaps in the very lowest objectives. In astigmatism of high degree, say 4 or 5 D., there is a marked indistinctness in using the lowest objectives, but the field becomes clearer with higher powers and with one-fifth or one-eighth objectives it is quite probable that there is an indistinctness only in the very highest grades of astigmatism above 6 or 8 D., forms of the very rarest occurrence.

The reason why the microscope thus corrects the observer's error of astigmatism is probably found in the optical principles by which the microscope is given *penetrating power*. With a good instrument

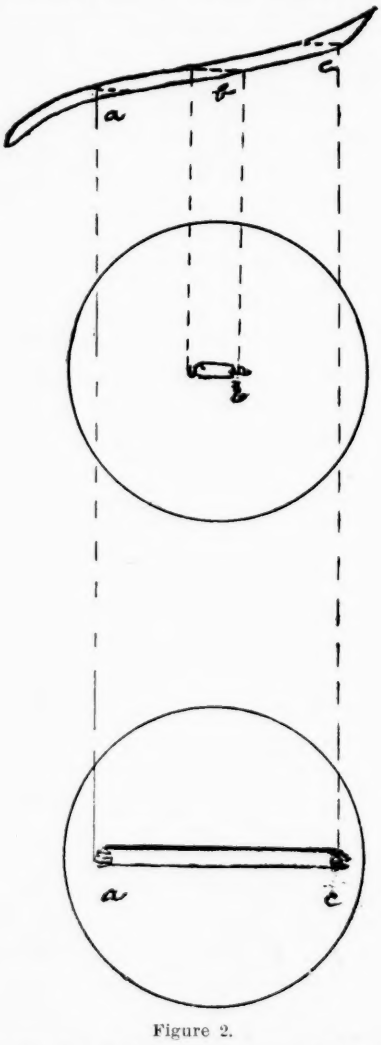

Figure 2.

the field is not a single plane through the object, but includes an appreciable thickness of the object looked at. Everything in this thickness is seen clearly, objects on the bordering planes indistinctly, and those above and below not at all. For instance, in looking at a fiber that is placed obliquely to the axis of a microscope with no penetrating power, we would see only a cross section of the fiber as at *b*. (Fig. 2.) Owing to the penetrating power we are able to see considerable of the fiber distinctly, say from *a* to *c*.

Take a single point of the object looked at, say at *a*. (Fig. 3.) All the rays from *a* are brought to a focus at *b*. Theoretically, there is only one point

where the image is formed, and for our purpose we may consider that there is no spherical or other aberration. At each side of b there are circles of diffusion and each point of light becomes diffused over a circle which increases in size, the farther we remove from b. Now the angle formed at b by the most divergent rays c and d is very small, owing to the great distance of b from the lens in comparison with the diameter of the lens. Hence for a considerable distance on each side of b the circles of diffusion are so small that the retina can not perceive them. Every amateur photographer has noticed that if he uses a diaphragm with a small aperture, there is an appreciable space in which he may move the ground glass of his camera back and forth and still have his scene in accurate focus. In the microscope, objects nearer or further from the lens than a, say a' and a'' and which will be accurately in focus at b' and b'' have circles of diffusion at b that are too small to be seen. The eye-piece forms a clear image of every point in focus theoretically between the two points b' and b''. Images beyond b' and b'' are blurred as their circles of diffusion are large enough to be seen, and points of light are recognized as circles.

The penetrating power is increased by the fact that

The warped surface of the cornea between the meridians of greatest and least refraction would theoretically prevent clear vision of lines at other angles than the above, but in the milder grades of astigmatism the warping is probably not sufficient to be noticeable, and these lines are clearly seen, as they should be in focus between b' and b'''. Thus it happens that the astigmatic eye has clear vision in the microscope, providing the astigmatism is not very marked, and can be neutralized by the penetrating power of the microscope.

If the astigmatism is so great that the image of the lines in the meridians of least and greatest refraction should be beyond b' and b'' then the eye can not see them without using the fine adjustment and giving the idea of increased depth or thickness to the object observed.

In the two inch objective, there does not seem to be any indistinctness until the astigmatism approaches .25 to .50 D., and for the other objectives the amounts in the table:

2 inch.	.25 to .50 D
¾ inch	.50 to .75 D
1-5 inch	3.00 D
1-12 inch (immersion) .	8. or 10. D. and probably higher still.

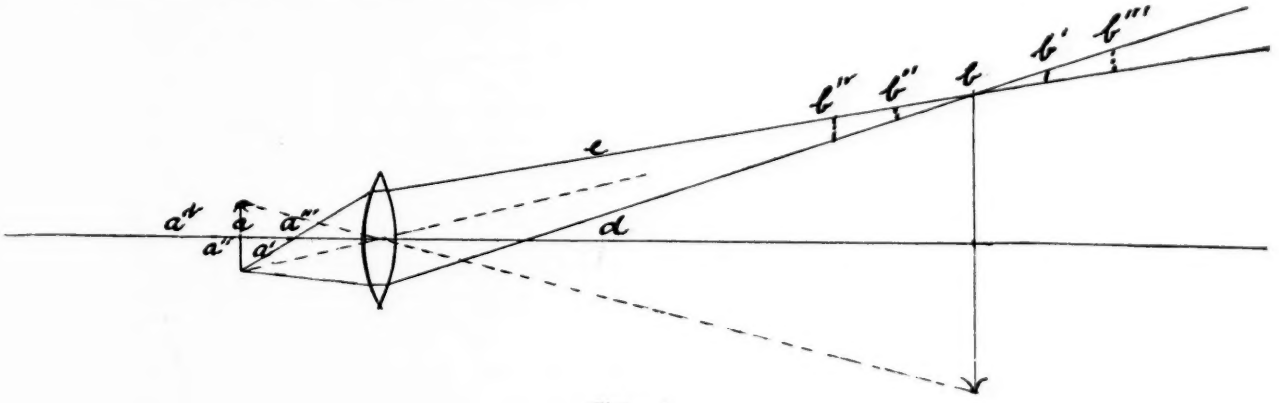

Figure 3.

though the observer's eye is accommodated for the image c (Fig. 1), it can at the same time still see images nearer and farther away than c. This can be explained by considering that the circles of diffusion of these images are too small at c to be noticed. The eye itself has considerable "penetrating power;" that is, if accommodated for a point, say, three feet distant, it can still distinctly see objects much nearer and farther away without altering the accommodation. The point of indistinctness is reached when the circles of diffusion on the retina become large enough to be noticeable or, in other words, when they lap over into adjacent nerve endings.

Now imagine at a, a series of radiating lines like the test card for astigmatism, such as every ophthalmologist uses. They are all in focus at b. An observer with astigmatism who looks at them through the eye-piece, requires the focus of the line parallel to his meridian of greatest refraction to be at b'' so as to be thrown to the far point of his meridian of least refraction. Lines parallel to his meridian of least refraction similarly should be at b'. Though they are both in focus at b, their circles of diffusion are so slight at b' and b'' that when the eye-pieces form images of b' and b'' at the proper points, in front of, and back of c, the eye sees them clearly.

The effect of the microscope in neutralizing the bad vision of the astigmatic increases with the power used, because the higher the power the smaller is the angle at b (Fig. 3) between the most divergent rays c and d, and consequently the greater is the distance between b' and b'' in which the circles of diffusion are too small to be noticeable.

There is a shifting of the apparent depths of lines, so that, though the astigmatic eye sees a field with great clearness, it is not the *same field* seen by the emmetropic eye. Referring to Fig. 3 again, the emmetropic eye sees all lines in the depth between a' and a''. Supposing the astigmatic eye should have lines in a certain direction in focus at b', it is quite evident that it will see all lines in that direction that are in focus anywhere between b and b'''. In other words, lines that are lying in this direction, are seen providing they are at any depth between a and a''' while parallel lines at other depths are invisible. Similarly, lines at right angles to the above are seen clearly if they are at any depth between a and a'''' and all others in this direction are invisible.

The figure supposes that the microscope is just sufficient to correct the astigmatism of the observer. If it is more than sufficient, the eye will see the first set of lines if they are at a lower depth than between

a and $a,'''$ that is, some will be below a and some above. Lines at right angles to these will be seen if in a higher layer than a to $a.''''$ Except for the higher grades of astigmatism, the shifting of the apparent depths of lines at various angles is so trifling that it need not be considered in practical work. In the one-twelfth immersion there is no appreciable change in this respect, even with an astigmatism of 13 D., though there is some interference with clearness. It need be taken into account only in using low powers where a drawing is made of a supposed object of a certain thickness, when what is really drawn consists of intermingled lines from different depths.

The acuity of vision for distant objects suffers a marked diminution as a result of astigmatism. This follows from the peculiar shapes assumed by the circles of diffusion. The expression, "circles of diffusion," is a misnomer here, because *circles* are formed at but one point. The figures are quite complex. A point of light is brought to a focus in a line parallel to the axis of greatest curvature, and at another place in a line perpendicular to the first. Beyond and between these two foci, the diffusion figures are ellipses and at only one point a circle.

Hence it follows that the acuity of vision suffers also in microscopic work, though to a very slight extent. Nevertheless, it is noticeable in high grades of astigmatism, even where there is no apparent shifting of the depths at which objects are seen. Observers with high grades of astigmatism, over 3 or 4 D., are better off if they use a correcting cylinder placed over the eye-piece. Certain microscopists certainly do see and figure most remarkable things that other observers can not succeed in seeing. Much depends on acuity of vision, *i.e.*, a good retina, yet it is safe to say that the frequent accusation of inaccuracy due to errors of refraction of the observers will not hold water, particularly with the higher objectives.

Persons with errors of refraction can therefore assure themselves that no correcting lenses are needed in microscopic work, except perhaps in astigmatism of high grade, and then only when using the lower powers. The spectacles may be discarded for almost all ordinary work. If much astigmatism exists and he desires to picture what the emmetropic eye will see, then the glasses may be used or, better still, a cylindrical glass of proper strength and at proper angle, may be placed on the eye-piece. It is of no consequence whether a convex or a concave cylinder is used.

A convenient method of placing the cylinder over the eye-piece has a soft steel frame, holding the cylinder, and has three soft steel bars to bend over and hold it in place. It was made for me by Meyrowitz, of New York. With its aid, the constant motion of the fine adjustment is less, and there is the absolute certainty that the objects seen in the field are what the emmetrope sees, but as before mentioned it is of no earthly use except: 1, in very high grades of astigmatism; or 2, in moderate grades in using the lower powers. Accurate observation with the higher objectives is compatible with quite a great astigmatic defect.

The spectacle frame prevents the eye being approximated closely to the eye-piece, and therefore restricts the extent of field. Its other inconveniences follow from its obliquity, and therefore its dispersion and reflexion of much of the light coming from the image. The brightness of the field is diminished. Its obliquity also alters the correcting power of the lenses on well-known principles.

Perhaps observers who wear spectacles may find it comfortable and convenient to use a special contrivance, similar to the bifocal spectacles (Franklin's), but with the lower lens omitted and the upper ones consisting of their usual correcting lenses. They can then look under their lenses when using the microscope.

The writer has tested the vision of an observer who has an astigmatism of 5.00 D. When using the two inch objective there is a marked interference with clearness if the cylindrical spectacles are omitted. A flat circle appears as an oval, and only a portion of the circumference is clear at one adjustment. As the instrument is screwed down, other parts of the circumference come in sight so that this shifting of the apparent depths of parts of the circumference gives the impression that the object seen is of the shape of a circle bent upwards.

In using the $\frac{3}{4}$ objective, there is barely a noticeable indistinctness when he removes his spectacles, but so slight in degree that it would not be noticeable if his attention had not been directed to it. With the $\frac{1}{5}$ objective, there is absolutely no difference in the appearance of the field, whether he looks through his spectacles or not.

The conclusions reached above may also be verified by making the eye ametropic by placing various spherical and cylindrical lenses in front of it, and observing the changes in the appearance of the field if any are noticeable. Such a demonstration is not mathematically exact but it is near enough for practical purposes.

The question of asthenopia resulting from microscopic work is entirely foreign to this paper, but it might be remarked in passing that it is due to bad light, bad position, congestion from constrictions around the neck, the habit of using the accommodation too much and unnecessarily, and to other conditions, but it is *not* due to the observer's errors of refraction. It is intended here, only to call attention to the fact that ametropes have clear vision in using the microscopes without their correcting lenses, and that it is unfair to accuse an observer of incorrect observation because his refraction is not normal.

Prehensile Feet among the Japanese.—The art of "getting there with both feet," which Japan has been illustrating in her treatment of China, seems to be a natural endowment. M. Michaut, the anthropologist, who has been investigating the subject, finds that the Japanese have marvellous address in the use of their feet as means of prehension. These members possess extraordinary mobility; the first metatarsal bone is separated from the second by an interval which may measure from eighteen to twenty millimeters, and the ball of the great toe may be made to touch the two adjoining toes. The Japanese rest on their knees, the feet in forced extension lying on the dorsum inclined inward and crossed one on the other, thus forming a little bench on which the pelvis rests. All the Annamites—the Cochin Chinese, the Tonkinese and the Annamites properly so-called—also have a remarkable separation of the great toe, amounting to from three to five millimeters and prehension also is possible. This can not be attributed to their footwear as might be the case with the Japanese, since the Annamites either go barefoot or wear sandals; nor to adaptation to environment, because they are inhabitants of the plains. History tells us of the kingdom of Giao-Chil, or the people of the "bifurcated toes," who presented this ethnic peculiarity of widely separated great toes in its maximum degree, and examples are still met with—in some families the anomaly being hereditary and descending usually from father to son.

PEDIATRICS AS A SPECIALTY.

CHAIRMAN'S ADDRESS.

Read in the Section on Diseases of Children, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY W. S. CHRISTOPHER, M.D.

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Is disease in children sufficiently distinct from disease in adults to merit separate and special consideration? It is not intended to submit this question to the members of this Section, for doubtless the answer would be unanimously in the affirmative. It is not so certain, however, that the answer would be the same if the question were submitted to the profession at large. Here I can only use it as a text upon which to set forth some of the reasons for our answer.

A few years ago Dr. Goodhart, of London, in his address as Chairman of the Section on Diseases of Children, of the British Medical Association, took the ground that there was no such thing as a specialty of diseases of children. A similar stand is taken by Ewald with reference to "Diseases of the Stomach." With Ewald I can heartily agree; with Goodhart as heartily disagree, and for much the same reasons.

He who looks at a stomach only, does not look far enough, but he who considers a child, has before him a biologic totality, temporary though it be. It is certainly true that many diseases are so nearly alike in both adults and children that a separate consideration of them from the two standpoints leads to little or no additional information, or to any broader conceptions.

It is equally true that to regard the child without reference to the future adult is but partial work. Pediatrics deals not only with the child as an individual, but as an episode in the development of the future adult, and its most comprehensive aim may be expressed as the attempt to control the environment of the child so as to produce the most perfect possible adult. The accomplishment of this object necessarily demands an intimate acquaintance with the pathology of adult life, so that the possible pathology of the particular future adult may be foreseen and the child's environment managed to avoid this as far as possible. But this necessary intimate acquaintance with disease in adults can only be obtained at the bedside. After all, this is only another way of saying that the specialist should develop from the general practitioner, and not attempt to specialize too early. It is sad to see, as I have seen, a skilled ophthalmologist carefully treat a child's eyelids and not realize that the child was seriously ill from pneumonia. Such an instance is no argument against the existence of ophthalmic specialists, but merely a lesson as to the manner in which they should be trained. Specialties dealing with particular organs tend to the development of narrow views in their devotees, for local disease in one part of the body does not preclude the existence of trouble in other parts; and besides, all organs are more or less intimately connected with each other. These facts furnish the grounds for objection to specialists in general, but after all they only furnish objections to individuals and not to the specialties themselves, for no one can contemplate the modern state of such specialties as ophthalmology, neurology, gynecology, laryngology, etc., without a feeling of professional pride. The remarkable advancement of gynecology in late years has been due, practically, entirely to those who do and think gynecology exclusively. It is certainly, however, too much to expect that the mind, unless it be that of a genius, which is constantly occupied with the study of pus tubes, and laparotomies, and perineorrhaphy, and round ligaments, should have time for the study and advancement of knowledge regarding the changing functions of developing organs, any more than that there should be demanded of it a ready and accurate knowledge of intra-ocular conditions. And yet the diseases of women and children are usually associated, in thought at least, and usually assigned to the same teacher in our medical schools. No man can serve two masters, and in this combination it is not uncommon to find the children sadly neglected.

Pediatrics, as a study, is free from the objections which apply to local specialties. It is limited because it deals only with a portion of the life cycle, but it includes the totality of the individual within that portion. If this be objectionable, so also is the ordinary practice of medicine, which practically today devotes special attention to the phenomena of another portion of the life cycle. It matters not whether the phenomena of childhood be studied by those who also work with adults, or be relegated to others with sufficient interest in children to study them exclusively, provided only that somebody may be interested to do this work. But as the individual who limits himself to particular channels of thought is more apt to gather all that those channels contain, the latter class would probably advance the subject more rapidly.

It can not be too often emphasized that children are not little men and women. The child is an unstable human being, constantly changing; now developing this organ or system with great rapidity, and now that; at one time provided with relatively great heart power, and at another with relatively weak heart; now having kidneys incompetent to do the work thrown upon them by the rapid and undue development of other portions of the organism, and consequently leading to the occurrence of morbid conditions, and later provided with kidneys capable of far greater strain than they are liable to be subjected to for a long time. If the various organs and systems of the child were developed exactly as needed by the remainder of the organism, and in consequence the functions of each were nicely adjusted to the needs of the organism as a whole, all would be well. But this ideal condition is not often seen, and possibly never exists. On the contrary, it is common to note the development of parts by jumps, with a necessary maladjustment of organs and a clashing of functions.

The clashing of functions may be so slight as to lead only to temporary disturbances of no great importance, but it may be so severe as to permanently disable some parts, and determine a *locus minoris resistentiæ* which follows the individual through life, and ultimately cuts short his existence.

Maladjustment of organs may occur not only from irregularity in development, but may be congenital, and is often largely influenced by hereditary tendencies. It may not be improper to mention two quite common types of organic maladjustment. Between seven and ten years of age children frequently increase very rapidly in weight and height. The heart

does not always develop *pari passu*, but from the strains to which it is subjected becomes dilated. It is then noticed that the child seems to be lacking in energy, and is listless, for which outdoor exercise is thoughtlessly advised. What is needed is restriction of exercise until the heart develops to the conditions demanded by the remainder of the organism. Care at the beginning would have prevented the dilatation —carelessness throughout may permanently impair the organ.

In the reptilian stage of its existence, the fetus tends to the formation of a solid urine. In very many instances this tendency remains after birth and shows itself in the well-known uric acid infarction of the kidneys of the newly born. This clashing of functions is disastrous to the unfortunate infant, whose kidneys are but illy adapted to the excretion of a solid urine, and consequently it suffers pain as the sharp crystals make their way through the tubules. The colic of the newly born is frequently due to this cause. As development proceeds, the organs adjust themselves to each other and usually after about three months the colic ceases.

It is not uninteresting in passing to look at some of the means by which nature attempts to protect the infant from this and allied troubles. First, it provides it with that form of food which of all others tends least to the production of uric acid, and then it diminishes the acidity of the urine by diminishing the acidity of the stomach juices, which last is done at some expense to the child, for it probably increases its liability to gastro-intestinal infection. At any rate, it is certain that the infant is more prone than the adult, to gastro-intestinal infection, but possibly it is better, for the race, to kill off some of the infants than to have a community of adults handicapped with Bright's disease. The tendency to excessive uric acid formation is exceedingly common in infancy, and is responsible for many disturbances of the infantile organism, notably often, eczema, which frequently persists or recurs in spite of all treatment until, as the saying goes, "the child outgrows it," which is but another way of saying that in the course of development the offending organs have become adjusted to each other in function.

The references already made to uric acid suggest the extensive and complicated group of conditions which goes to-day by the name of uricacidemia, or the uric acid diathesis. It is not my purpose to discuss with you this subject, or even to give reasons for doubting that uric acid itself is the real toxic agent in many of the conditions usually ascribed to it, but merely to refer to the condition as one of a group of toxemias having a common origin.

In these days of bacteriologic research, it is customary to ascribe nearly all pathologic processes to the action of microörganisms, even assuming, as is done in the "Index Medicus," that cancer is of microbic origin, something as yet very far from proven, and practically holding that all febrile processes originate from like causes. Such assumptions have, it would seem, concentrated too much attention on these etiologic factors, and clouded our perception of others probably equally important and operating in essentially the same way. Certainly, the most common, if not the whole means by which microörganisms produce their effects, are the chemical toxins to which they give rise in the course of their biologic activity. But all cells equally produce chemical products, some of which are toxic to themselves, and to other cells. And it is quite indifferent whether these cells lead an independent existence as unicellular organisms, or live in permanent juxtaposition to other cells as units of a differentiated tissue with specialized functions. This latter is the condition of the cells which make up the higher animal organisms, and it has long been known that they produce toxins inimical to themselves, and to the organism of which they are elements. Limiting ourselves to man as the animal in which we are most interested, we know that normally he is provided with abundant means for protecting himself against auto-intoxication, but in abnormal conditions this protective apparatus fails and auto-intoxication occurs, and nowhere in the life cycle does auto-intoxication occur in such varied forms, or so commonly, as in childhood. This is partly due to the incompetency of incompletely developed eliminating organs; partly, to the incompetency of incompletely developed organs normally concerned in the transformation of toxins into non-toxins; partly, also, perhaps, to the unusual products produced by incompletely developed organs, or resulting from the maladjustment of correlated organs. This whole wide field of study is practically untouched, but as clinicians we constantly get perplexing glimpses of it.

Among the numerous pediatric problems which should attract the attention of the clinician, there are none more interesting than those presented in the anomalous fevers. Fevers in adults can usually be named; that is to say, they can be traced to definite etiologic conditions, or to morbid processes having a tolerably well-defined and well-known natural history. But this is not true in childhood. It is common to meet in children, fevers of infectious origin, as shown by their simultaneous occurrence in numerous individuals, in a given community, but which do not run courses consistent with the natural history of any of the known and well-defined febrile processes. In the light of present knowledge it is fair to assume that such fevers are caused by various microorganisms, and that those that are caused by a given organism are tolerably constant in their manifestations in different individuals. But largely because they do not have striking and characteristic exanthematous symptoms they have as yet eluded specific clinical classification. Even now, the eruptive disease, rotheln, is so differently described by various writers, that it can hardly be said to have earned yet a definite place in nosology. The undifferentiated fevers afford a magnificent field for clinical observation, particularly at the hands of pediatricians, for it is during childhood that they are most commonly found. At present the best that can be done is to recognize that there does exist a group of undifferentiated fevers, and to avoid forcibly classifying them with known conditions, and giving them names which are not correct.

Time forbids a farther discussion, but in conclusion let me answer the opening question. Disease in children merits special and separate consideration from disease in adults, for the following reasons:

1. Pathogenesis in childhood includes many elements entirely lacking in the adult:

a. Undeveloped organs with incomplete functions.

b. Irregular development of organs with consequent maladjustment, and clashing of functions.

c. Numerous special auto-intoxications.

d. Different susceptibility to various infections.

e. Compensatory relations in the child are often peculiar to it, and entirely different from anything found in adult life, *e.g.*, reaction of the stomach and uric acid excretion.

2. Morbid entities of similar causation often present vast clinical differences in the two periods of life, notably, typhoid fever, rheumatism and tuberculosis.

3. Trifling pathologic conditions are more important in childhood, because of the impress which they make on developing organs, and because of their farther reaching influence over the long future life of the individual.

4. The dangerous plasticity of the growing organism also presents therapeutic possibilities not found in the adult, but of vast importance to the future adult.

5. The nutritional problems are numerous and comprehend many factors not to be considered in adults at all.

OVER-FED INFANTS; CAUSE, EFFECT, TREATMENT.

Read in the Section on Diseases of Children, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5–8, 1894.

BY J. A. WORK, M.D.

ELKHART, IND.

We can say properly, that an infant is over-fed when it fails to digest and assimilate the food furnished it. The natural food for the newborn babe, all things being equal, is the food sent with it—the mother's milk—which for the first two or three days after birth seems, to the inexperienced or unthinking mother or nurse very inadequate to the support of the child, but it is all that the little new creature can possibly, with certainty, digest and assimilate. Too often the mischief is played with the child during the initiatory period of its digestion. It is often difficult for the attendants in the nursery to realize or understand the untried weak condition of the whole digestive and correlative systems of the infant. In fact, we must consider that the whole new being with all its varied systems, both anatomic and physiologic is in a primary rudimentary condition. Thus we observe the simplest form of food which is naturally furnished it. Recognizing the foregoing fact we should act intelligently if we are called upon to advise in artificial feeding, and select that food for the unfortunate infant which most nearly simulates the mother's milk. Unless disease is present with the mother, which is transmissible by her milk to the child, we should use our utmost endeavor to have it nurse the mother; as we have the best interests of both mother and child in view.

Some young mothers do not possess the best facilities for furnishing this natural food to their offspring, but there are very few who can not be corrected in this respect by patient persistence. If the nipple is not drawn to dimensions sufficient to allow the babe to nurse well during the first two or three days after parturition, we may have to resort, unfortunately, to artificial feeding; for after lactation proper ensues there is usually such a turgescence of the mamma that satisfactory modification of the nipple then is impossible, and after the usual application of pumps, plasters, and various ointments to remove this gorged condition, the babe is virtually weaned; and if the child is so fortunate as to get its natural food, unless regular habits of feeding during the initiatory stage are observed, it is in danger, when lactation proper ensues, of over-feeding or being over-fed. There is a great temptation often on the part of the mother, which is largely selfish, to make a breast pump of her child, and thus its stomach is impaired. If normal regular habits as to nursing are well established, on the part of the child, commencing immediately after birth, which habit we know can be attained within seventy-two hours by allowing the child its own undisturbed time to rest or sleep, after first attending to all its needs as to proper cleansing, clothing and food, if it demands it, before tucking it in its little bed in a warm properly ventilated nursery, allowing it to awake by force of hunger, or some other cause peculiar to itself—some dictate of nature. When it awakes give it such care as will make it comfortable for another period of rest, of from two to six hours, then put it to the breast again to its satisfaction. It may nurse itself asleep, then tuck it away again, and so on, and we can truly say it is a natural child, following natural habits of life. And, too, the mother by this habit of the child will find that the supply of food will adjust itself to the needs of the child, and by a little common sense on the part of all concerned in the care of the little one, there will be no danger of over-feeding and bringing on the invariable result, viz., indigestion, bad assimilation and perchance cholera infantum.

The result of over-feeding is the leading factor in the very great mortality in infancy and childhood. It is true that quality of food plays an important part in the ailments of children. Even in considering the zymotic diseases of children, by which diseases so often fond hopes are blighted, we must admit that the mortality is largely due to over-feeding prior to the inception of the disease. The disease is severe or not, according to the fermented condition of contents of the alimentary tract. The decomposed contents of the *primæ viæ* is a fertile field for the rapid propagation of bacilli or disease germs. Thus the severe form of the disease.

The incontrovertible law of cause and effect holds good in the consideration of our subject as well as in all things else with which we have to do. Not long since I was called to the bedside of a child 20 months old, who was feverish, emaciated and debilitated, even to inability to close its eyes; could scarcely utter a cry, had frequent curdy stools and vomited sour curd occasionally. Disease had been denominated cholera infantum. On inquiry of the mother I learned that the child had been sick at intervals for twelve months, and suffered similarly, as at this time. Had employed four physicians during this period; child was weaned from its mother and I learned that she was instructed to give it all the cow's milk it wanted, and whenever it wanted it. The case required but little study to determine a diagnosis; cause, over-feeding; effect, the condition of child as above delineated. Before consenting to treat the case, I had the mother promise to follow my directions strictly. We all know how often a mother's sympathy or affections run away with her judgment and thus our directions are not followed, and the result is not satisfactory to either friends of patient or doctor. I ordered three teaspoonfuls of good fresh cow's milk (cow was in the barn near by)

every three hours, preceded by a weak solution of bicarb. potassium and followed by two or three grains of catalysin and carbon. This treatment was to continue for twelve hours, and if vomiting ceased and stools less frequent, or changed for the better, they were to give four teaspoonfuls at a time, and so on, as the child improved in its digestion and assimilation. We increased the amount of milk until twelve or fifteen drachms were given at a time which was enough to cause the child to improve so that in four days I pronounced it well, and only had to advise temperate feeding.

Over-feeding the infant and the result following *directly*, renders the system less resistant to the diseases of childhood and, in fact, may be a menace to its well being throughout even a long life. On the other hand, if wisdom is used in following the dictates of nature, (as God intended we should) in the feeding of infants, the foundation is laid, physically, for a long and useful life.

DIAGNOSIS OF PNEUMONIA IN CHILDREN.

Read in the Section on Diseases of Children at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY EDWARD H. SMALL, A.M., M.D.
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Pneumonia in children may be divided into two classes: croupous pneumonia and broncho-pneumonia. There has been a number of different names given to these two forms, viz., croupous, lobar and fibrinous pneumonia for the first; and catarrhal, lobular or insular pneumonia, bronchitis, capillary bronchitis and broncho-pneumonia for the second. A great deal of confusion has arisen on account of the various names applied to the second class. "Catarrhal" is not altogether correct, for other tissues than mucous membranes are greatly affected. Indeed, Neimeyer says: "As no mucous membrane with mucous glands exist in the pulmonary vesicles, the name, catarrhal pneumonia, is not quite applicable to the disease in question." The name "lobular" or "insular" pneumonia "should not be used because it neither includes or suggests the bronchial inflammation which is always present." Neither "capillary bronchitis" nor "bronchiolitis" is an exact term, as inflammation of the capillary bronchi is rarely found without involvement of the lobular structures. "This term would mean a bronchitis which has reached its highest possible development without becoming a broncho-pneumonia—a condition which can not with certainty be recognized by either physical or rational signs." "Broncho-pneumonia" is by far the most descriptive term and the one which should be used.

"Croupous" and "lobar" are sufficiently descriptive. "Fibrinous" is the name the English use.

"Croupous pneumonia is an inflammation involving one or more lobes of the lung, or of both, attended with an exudation into the air-vesicles of the affected part, consisting of coagulated or coagulable fibrin with many red and white blood corpuscles from the surrounding blood vessels."—Pepper.

Broncho-pneumonia is an inflammation of the bronchial lining membrane, which by direct extension involves the connective tissue, bronchioles and air cells, attended with an exudation into the alveoli, principally of desquamated epithelium and leucocytes; or, according to Osler, "an inflammation of the terminal branches and the air vesicles which make up a pulmonary lobule."

Pneumonia is now considered by most writers a specific infectious disease. The pneumococcus of Fraenkel is the most constant organism to be found, and is the exciting specific cause, although others are often seen in connection with it. This was first discovered through Pasteur in 1881. In 1886 Fraenkel obtained pure cultures of it, settled its specific character and pathogenic action and christened it pneumococcus. This may also be found in human saliva, the pleura, meninges, endocardium, or middle ear. It may invade these parts during a pneumonia, or it may be found in meningitis, pleurisy or otitis media when pneumonia is not present. Netter says it is a reminder of pneumonia, and is met with in persons who have had this disease. In France, bacteriologic investigations in a large number of cases of pneumonia in children showed the presence of the pneumococcus in all cases examined of croupous pneumonia and in 60 per cent. of broncho-pneumonia. It is often very difficult to find it in the latter, on account of its frequent association with other microörganisms.

Croupous pneumonia is almost always a primary affection, occurring at all ages and seasons. It occurs most frequently in the winter and spring, when children are most likely to catch cold. It occurs often in dwellings whose sanitary condition is bad, where there is defective plumbing, in filthy and ill-ventilated tenements, crowded jails and workhouses—these conditions furnish a nidus for the coccus.

Broncho-pneumonia is, on the contrary, a secondary affection. As a rule it is preceded by a bronchitis, and is often a complication or sequela of the infectious fevers: measles, whooping cough, scarlet fever, la grippe or diphtheria. In children it forms the most serious complication of these diseases and often causes more deaths than the fevers themselves. Cases are common after operations on the mouth and nose, after tracheotomy and intubation—the so-called aspiration or deglutition pneumonia, where particles of tissue slip through the larynx into the lungs, and induce such an intense broncho-pneumonia that suppuration, or even gangrene may develop. In infants it may arise from inspiration of the vaginal secretions. The bacillus tuberculosis often causes a fatal form of broncho-pneumonia.

It has been taught by many that croupous pneumonia occurs but rarely in children under three years of age. Jacobi says that about one-third of the cases at this time are croupous. Holt gives a list of 207 cases of pneumonia under three years of age, in which the diagnosis was undoubted, of which 160 or 77.3 per cent. were broncho-pneumonia, 47 or 22.7 per cent. were croupous. Baginski gives 151 cases under three years, with 76.2 per cent. broncho-pneumonia, and 23.8 per cent. croupous. After three years of age the number of cases of croupous pneumonia approach those of broncho-pneumonia.

Croupous pneumonia is a primary disease, coming on suddenly while the child is in good health. Recently I took part in a discussion on pneumonia in children, in which a number of cases of so-called broncho-pneumonia were related, which came on suddenly, without a preceding bronchitis, ran a favorable course of a few days with complete recovery. I think these cases were undoubtedly croupous

pneumonia in which many physicians err in their diagnosis. The first symptoms are cough, pain in the chest, or epigastrium. At the Home for the Friendless we had some twenty cases, in which almost all the children complained of pain in the epigastrium, irrespective of the part of the lung involved. In some children the power of localizing pain seems to be deficient. Then we have drowsiness, lack of appetite, languor, chilliness. The rigor which occurs in adults is rarely seen in children, in place of which there is usually vomiting, or in some, convulsions. (Rusty sputum is rarely seen in children.) Elevated temperature, rapid pulse, and increased respiration soon follow. Often the temperature reaches its highest point in twenty-four hours, 103 to 105 degrees or higher. This keeps up with a slight morning remission for from four to seven days. There is a deep flush on one or both cheeks, some think corresponding to the side involved, and often herpetic eruptions on the lips. The cough continues, but is suppressed as much as possible on account of the pain it causes. The breathing is hurried and the nostrils dilated with each inspiration; the rate may be 40, 60 or 70. The pulse is greatly accelerated; the pulse-respiration ratio is changed from the normal of 1 to 4½ to 1 to 3, or 1 to 2½ or 2. Defervescence takes place in about a week. Usually this is sudden, by crisis. The fall often occurs in twenty-four hours from the highest point to normal or below it. I had a case in which the temperature fell to 96 degrees with good recovery. Holt reports a case in which in fifteen hours there was a fall of 10½ degrees, from 105.5 degrees to 95 degrees, and the next day to 94 degrees, with recovery. Rarely the defervescence is gradual by lysis[1].

Broncho-pneumonia is almost always secondary, following bronchitis. When it sets in there is more fever, the pulse is more rapid, the breathing faster and more labored. The fever is very variable, with no definite curve. It ranges from 102 to 105 degrees or higher. The pulse-respiration ratio is 1 to 2 or 1 to 1½, respiration going to 70, 80, 100 or more. There is great dyspnea, the child fights for breath. There is great dilatation of the alæ nasi and retraction of the ribs. The dyspnea is often constant and progressive, and soon signs of deficient aeration, suffused face and bluish finger tips are seen. The child has a most anxious expression and gradually enters upon the most distressing stage of asphyxia. "At first the urgency of the symptoms is marked, but soon the benumbing influence of the carbon binoxid on the nerve centers is seen and the child no longer makes strenuous efforts to breathe, the cough subsides and with a gradual increase in lividity, and a drowsy restlessness, the right ventricle becomes more and more distended, the bronchial râles become more liquid as the tubes fill with mucus, and death occurs from heart failure."—Osler. Recovery is gradual, by lysis, and occurs at no definite time—several weeks.

The physical signs in croupous pneumonia are the same as in the adult. They are oftenest at the summits of the lungs. Often these can not well be made out until late, owing to the small amount of the lung involved and to its central position. At first we must depend most upon the general symptoms. The crepitant râle is not so easily made out as in the adult. Bronchial breathing is easily heard during consolidation, especially high in the axilla. Dullness on percussion will sometimes precede bronchial breathing. Increased vocal resonance and fremitus can generally be made out.

In broncho-pneumonia, fine râles are heard at the bases, or widely spread throughout both lungs. In the first few days percussion resonance may not be impaired, in fact, emphysema may cause hyperresonance, afterwards areas of impaired resonance or dullness may be found at the bases. Many râles may be heard, chiefly of the fine subcrepitant variety, with sibilant ronchi. At times the careful examiner may make out scattered nodules of consolidation.

So far in this paper, I have endeavored to contrast the two forms of pneumonia in children. I will now recapitulate the chief differences in tabular form:

CROUPOUS PNEUMONIA.	BRONCHO-PNEUMONIA.
Primary disease arising suddenly.	Secondary disease, following a bronchitis.
Pneumococcus always present.	Pneumococcus present in 60 per cent. of cases.
Temperature of 104 degrees or more in the first twenty-four hours.	Arises more gradually.
Definite temperature rate with slight morning remissions.	Temperature of no definite rate.
Pulse-respiration ratio of 1 to 3 or 1 to 2½ or 2.	Pulse-respiration ratio of 1 to 2 or 1 to 1½.
Respiration rate of 40 to 80.	Respiration rate of 60, 80, 100 or higher, and much more laborious with more dyspnea.
Pulse rapid, but soft and full.	Pulse rapid, and often weak and unresisting.
Pain severe.	Pain less severe.
Flushed cheek.	Lividity of face.
Cough frequent, but not constant, and not usually preceding pyrexia.	Cough invariable and usually preceding pyrexia.
Not so frequent in children under three years. After the fifth year, uncomplicated pneumonia is generally croupous.	Under three years the ratio is about 4 to 1.
Physical signs are mostly confined to one or two lobes of one lung.	Physical signs are heard in both lungs with no definite limitation.
Upper lobes most affected.	Posterior inferior lobes most affected.
Generally area of consolidation in two or three days.	Only exceptionally are consolidations to be found.
Bronchial breathing, fine crepitant râles, bronchophony and increased vocal resonance and fremitus.	Different kind of râles in both lungs and later subcrepitant râles. Although we may have dullness from aggregated affected lobules, we do not have therewith bronchophony and increased vocal resonance and fremitus.
Generally ends by crisis in about seven days with good recovery.	Ends by lysis in two or more weeks, with permanent lesions or death.
Mortality 5 to 10 per cent.	Mortality 30 to 50 per cent.

A CASE OF EXOPHTHALMOS IN AN INFANT OF THREE MONTHS.

Read in the Section on Diseases of Children, at the Forty-fifth Annual Meeting of the American Medical Association, held in San Francisco, June 5-8, 1894.

BY HARRIET E. GARRISON, M.D.

DIXON, ILL.

The patient whose case forms the basis of this article, is the elder of twin boys, born June 30, 1893. This was the mother's third confinement. The labor was normal. The delivery of No. 1 was retarded by vertex presentation. He preceded his brother by forty minutes, weighed eight pounds, and No. 2 weighed nine pounds. No. 1 cried lustily and to

all appearances was as strong and vigorous as No. 2. He was warmly wrapped in flannel and placed on his right side. After the third stage of labor was completed, and the mother was made comfortable, as I had but the assistance of an untrained nurse I looked after the children. I found the nurse bathing No. 2, and No. 1 lying as he had been placed at birth, but he had become blue and the extremities cold. In an hour's time by the application of dry heat and hot water internally he had lost the blue color and the hands and feet had become warm. When I saw him twelve hours afterward I could not distinguish him from No. 2, but the attendant said he required more care to keep him warm and comfortable than No. 2, which condition continued. It was two months, August 29, before I again saw the children. Then No. 2 was very sick with cholera infantum. At this time No. 1 weighed nine pounds and No. 2 eleven. On the next day No. 1 showed choleraic symptoms. No. 2 had much the more severe attack of cholera infantum but No. 1 was harder to treat. In a few days No. 2 was rosy and vigorous while No. 1 continued to have gastro-intestinal troubles. September 27 the mother brought the babies to my office. No. 1 was very much emaciated not weighing as much as at birth, but the most marked symptom was the protrusion of the eyeballs—they were apparently being pressed from their sockets. The mother said she had not noticed this condition until a few days previous. At this time I first noticed tachycardia, the pulse ranging at 240 per minute. The next week he was again brought to my office. The protrusion of the eyeballs was not as marked as the week before, but there seemed to be no change in the tachycardia. At this time, the mother thinking No. 1 would not live had them photographed, a copy of which I now present. They are arranged to hide the protrusion of the eyes of No. 1 but it can still be seen. From this time on he continued to improve and in two months the mother told me he weighed fourteen pounds against sixteen for his brother. December 30 the mother again brought him to my office as he had been sleepless, cried a great deal, and his head was hot. He had cut two lower incisor teeth and the upper gums were very red and much swollen. At this time the mother called my attention to the tumultuous heart action. She said she had noticed it for several weeks, sometimes more violent than at others. While in the office the beating was sufficiently violent to shake the clothing over the chest. The pulse rate was now 180 per minute. A careful examination of the heart showed nothing abnormal except the thrilling motion. In January he had a severe attack of la grippe with brain symptoms which continued ten days; pulse 200, temperature 103° F. In the ninth month the pulse was 150, of good volume. The only difference discernible in the twins at this time was the pallor of No. 1 and the staring of the eyes. At the present time in the eleventh month, No. 1 is rosy and hearty looking, has lost the pallor and staring of the eyes, pulse 100, of good quality, creeps actively but does not climb, and stands as much as No. 2. No. 1 weighs nineteen and one-half pounds; No. 2, twenty-one and one-half pounds. No. 1 has all his incisor teeth; No. 2 has six. At this time the children were again photographed. In the photograph the laxness of the muscles of No. 1 is very noticeable as he does not sit nearly as erect as No. 2. His mother tells me his head perspires when he sleeps.

Exophthalmos, Graves' disease, exophthalmic goitre, Basedow's disease, struma exophthalmic, tachycardia strumosa, cardio-thyroid exophthalmus are some of the names which have been applied to this disease—which usually has three prominent symptoms; tachycardia, exophthalmos and goitre.

Graves was the first to distinctly group these symptoms, but gave most prominence to tachycardia and exophthalmos. Then later, Basedow more fully described the symptoms, but made the goitre more prominent. Tachycardia is the first symptom usually observed; the other two varying in different individuals, sometimes the exophthalmos appearing first and sometimes the swelling of the thyroid gland. In this case the exophthalmos was the first symptom noticed. A mild tachycardia very likely existed before the child was brought to me, but the tumultuous heart action was not observed until nearly two months later when the exophthalmos had nearly disappeared, and at no time was any swelling of the thyroid gland observed. This agrees with a case recorded by Graves in which tachycardia was first noticed, then exophthalmos and two months later the thyroid swelling. Improvement began in my case so soon that the thyroid gland did not become involved.

I have now under my care a girl of 14, with goitre. The pulse is 120 with chlorotic bruit. The murmur is very marked over the carotids and thyroid. The patient's eyes are prominent but not protruding. In another young lady with well marked goitre of right lobe the pulse was never over 120. Exophthalmos came on suddenly while she was being treated for goitre by electricity; the exophthalmos was relieved by treatment but the eyes still looked large. The goitre was but slightly reduced by treatment and is still noticeable at the present time, although she now seems perfectly well and is the mother of several healthy children.

Cause.—There was never any case of goitre among the children's ancestors, therefore heredity could be excluded. The parents are both large, vigorous and healthy, of German descent. The grandparents are living excepting the paternal grandfather who died of acute pneumonia. The house in which the children live is one of the oldest in this section of the country. It is located on low land near a small stream which at this point is quite sluggish. The difference between the air on the highlands and on the lowlands was very noticeable as I drove down from the surrounding hills in the early morning hours on the day of the children's birth. Although it was very warm June weather the air in the house felt damp and cold, and I directed a fire to be lighted by which the children might be dressed. It is to this unsalubrious situation that I attribute the child's condition; weaker at birth than his brother he could not overcome the unfavorable climatic conditions. Why it should take the form of exophthalmos can perhaps be accounted for by the condition in which the child was an hour after birth. The venous stasis and coldness of the extremities showed a weakness somewhere in the child's system. It could not have been organic heart trouble or it would not have been so quickly relieved by the application of heat. There must have been a weakness of the nerve centers, which control the generation of heat and the vaso-motor nerves. This accounts for the failure of the child to rally from the attack of cholera infantum as this had farther injured the already weak nerve centers. Whether this condition was caused by the pressure on the brain from the vertex presentaion or whether it was caused by a defect in nutrition during fetal life, I am not prepared to say.

Treatment.—The child had been taking almost continually, from the time it had the attack of cholera infantum, medicine to assist digestion and to tone up the system. As soon as I saw the child had exophthalmos I gave, in addition to the medicine it was already taking, arseniate of strychnia. A granule containing 1-134 of a grain was dissolved in nine teaspoonfuls of water, and one teaspoonful of this solution was given every six hours. This was given regularly for a long time and was resumed as soon as the brain symptoms of la grippe were controlled. The arseniate is giving as favorable results in the case of chlorosis now under my care. She has been taking it for a month, the pulse rate has decreased to 90 and the goitre is materially reduced. She takes 1-67 of a grain every four hours.

Diet.—The mother having very little breast milk, gave in addition sterilized milk, and as is usually the case, when babies are given the bottle, the children soon became weaned from the breast and the sterilized milk formed the whole diet. After the attack of cholera infantum they were given condensed milk. This agreed perfectly with No. 2, and he has never been under treatment since, but did not agree with No. 1 and he was given, in addition to condensed milk, beef extracts and several infant foods. At the time of the exophthalmos, he was put on peptonized milk for a few days but was soon returned to condensed milk. After the attack of la grippe he was given sterilized milk which at the present time with bread and butter forms the diet. No. 1 consumes double the quantity of milk which No. 2 requires, but does not increase in weight any more rapidly than No. 2.

All the cases of exophthalmos or goitre which have come under my observation before this case, have been in females at puberty or later, for which reason I have always regarded tachycardia, exophthalmos or goitre as being a symptom or symptoms of reflexed nervous origin—the uterus and its appendages being the source of irritation. But since studying this case, I have reached the conclusion that the disease is located in a sympathetic ganglion or ganglia, and the disease of the other organs is due to loss of proper nerve stimulus. And the proper treatment of these conditions is to increase the nutrition of the nerve centers.

DERANGEMENT OF THE KIDNEYS IN LITHEMIA OF CHILDREN.

Read in the Section on Diseases of Children, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5–8, 1894.

BY J. M. G. CARTER, M.D., Sc.D., PH.D.

WAUKEGAN, ILL.

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One of the most common forms of derangement in the alimentary canal of children is due to the failure of the liver to properly perform its function. This neglect of duty on the part of that important organ permits the accumulation in excess in the blood of glycogen or sugar, uric, oxalic and other acids.

The origin of this trouble is found in improper food in many cases, producing acid digestion. At times, however, the derangement seems to be caused by some nervous influence or an inherited dyscrasia. The condition, whatever its origin, seems to consist in an imperfect digestion of food, or an incomplete oxidation of proteid material by the hepatic cells. An excessive indulgence in sugars, starches, and fats may produce both imperfect digestion and failure on the part of the hepatic cells to completely oxidize the proteids. An acid indigestion is a common result of this indiscretion. Languor, constipation, flatulence and similar symptoms are characteristic of the condition. The skin is sallow or of a peculiar muddy, dingy, unhealthy appearance. The eye is deprived of its normal clearness and, though not tinged with pigment to the extent it is in jaundice, it is dull and characterized by loss of expression. The facial appearance is often listless and uninteresting. The secretions are diminished and digestion is impaired; conditions which may last for weeks or months. A glycosuria may occur in infants of the first month, and in such children we are likely to meet with lithemia in later life.

Chronic gastritis or gastric irritation and nervous conditions should excite a suspicion of lithemia if the etiology is at all obscure.

When a nervous, fretful, peevish, restless, ailing child, with a voracious or fitful appetite does not yield readily to simple treatment, or is found to have occasional attacks of illness similar to the condition just mentioned, lithemia should be suspected, and a careful examination of the urine made to discover the changes which characterize this disturbance.

If uric acid is not transformed into urea an excess of that acid occurs in the blood and will be excreted by the kidneys. In fact, all acid urine will sooner or later deposit uric acid. Uric acid crystals and urates are sometimes deposited from urine of lithemic children. I should expect that a lithemic child, if this dycrasia is not corrected, would manifest more serious symptoms of disease in adult life; in England, perhaps gout; and even in America there seems to be a rapid tendency to that popular disease. It must be borne in mind that the continued irritation of the kidneys by the overburdened work of excreting an excess of uric acid for years may be followed by congestion, nephritis and albuminuria. An excess of oxalic acid or oxaluria may likewise be followed by an albuminuria. In such cases there is a high specific gravity of the urine with urates, albumen and casts. These serious cases might be prevented in many instances by a recognition of the lithemia of children and its proper treatment. Along with the intestinal, alimentary and nervous symptoms in such cases will often be found a congestion of the kidneys. The patient desires to urinate frequently, sometimes has a feeling of fullness or distress in the lower dorsal region. Specific gravity generally high, 1020 to 1030; urates, phosphates often and sometimes uric acid, oxalic acid, albumen, or sugar may be present. I have found in some instances a trace of albumen or sugar; and in some I have found indican. I have accepted the presence of indican in obscure cases as indicative of intestinal disease. With the presence of these abnormalities in the urine, ordinarily, there are other symptoms which direct the attention to some derangement of the digestion. The two following cases represent different manifestations of this condition as it has occurred in my experience:

Case 1.—E. P. was a fretful, restless child from birth; sleep disturbed, waking in pain or with some undiscoverable distress many times during the night. Paroxysms occurred every few weeks or months during which the restlessness, wakefulness and peevishness were increased and accompanied by symptoms of acid digestion. The appetite was variable, skin sallow or muddy, the acid urine of high specific gravity and loaded with phosphates and urates. Micturition frequent and often irritating. No albumen or sugar. Tongue slightly coated. Treatment directed to correct the indigestion and eliminate the excessive elements in the urine always relieved the paroxysms. It was seldom necessary to prescribe for the fever which often accompanied these attacks. A permanent cure was produced by regulation of diet and a protracted treatment to correct the morbid condition of the digestive organs.

Case 2.—H. C., 4 years old, frequently has attacks of indigestion and often these verge upon simple continued fever in the persistency of the symptoms and mild fever. The last attack occurred April 15, 1894. Appetite variable. Skin sallow and muddy. Tongue slightly coated, temperature scarcely above normal and pulse only 85 to 90. The patient was peevish, restless, had a constant feeling of fear; and distress in the stomach. Urine 1026, acid, contained a trace

of albumen, urates, phosphates, indican. Urination occurred six to eight times a day. Amount in twenty-four hours eight ounces. Uric acid present, amount not determined. No sugar or bile pigment. The diagnosis was lithemia with congestion of the kidneys. The treatment directed to elimination of retained matters; correction of the indigestion and relief of the deranged kidneys resulted in a cure in two days. There is a persistent custom in this family of feeding the child with sugars, candies, etc., and allowing an uncontrolled appetite to be satisfied at every meal, so that the prospects for a permanent cure are remote.

I may add also that the father is a sufferer from gout. Such cases seldom recover without a complete change of environment. The treatment should be such as will prevent the formation or accumulation of too much acid in the stomach during digestion, and yet will render aid to the embarrassed liver in discharging its functions. The first indication can be met by giving alkalies during or before meals, as bismuth, bicarbonate of soda or lime water; and acids, hydrochloric or aromatic sulphuric, and pepsin after meals. Nitric acid sometimes produces excellent results given an hour and a half before or two and a half or three hours after meals. Theoretically, nitric acid parts with sufficient oxygen to transform uric acid into urea. The phosphate of soda is valuable in many cases. The second indication may be met by giving water between meals. In older children the encouragement of a habit of drinking water an hour before meals and two hours after, will assist in flushing the system, not only relieving the liver but reducing the irritation existing in the kidneys. All treatment should accomplish, or have for its aim, the relief of the kidneys from the excessive work which eventually will lead to permanent trouble if not prevented by the removal of the acid dyscrasia.

Investigations properly directed would undoubtedly show that the increase in the number of cases of Bright's disease which we now meet as compared with the same a few years ago can be attributed in part to the increase of cases of uric acid diathesis and lithemia among children and young people caused by the indigestion of pastries, rich foods, confectioneries, sugars, etc. These conditions are due to the methods of living adopted by families as soon as they attain a degree of wealth that permits such indiscretions; conditions which in many instances might have been corrected in youth. In my experience most of these cases occur in well-to-do families, and it is necessary to give directions curtailing the custom of constantly putting something into the child's stomach. If the cases are infants on the bottle, or young children whose chief diet is milk, it is often necessary to sterilize the milk as that renders its digestibility more nearly like human milk. When such a case occurs in a family where the nervous temperament is prominently developed, I prescribe the syrup of hypophosphites—Churchill's. Ordinarily I prescribe minute doses of calomel and soda or mercury with chalk at the beginning, and have the patient given an alcohol sponge bath morning and evening to be followed by inunction with olive or cocoanut oil. These simple remedies with diaphoretics, diuretics and other eliminatives, if needed, will generally be sufficient for the first two or three days. After that I like the effect of aromatic sulphuric or hydrochloric acid (well diluted) half an hour before taking food three or four times a day, and phosphate of soda in 5 to 10 grain doses three times a day until a cure is produced. Seltzer, Buffalo Lithia, Vichy and other mineral waters have been advised, and should be taken warm and when fasting. The three chief objects to keep in view are: 1, to remove the acid digestion; 2, to regulate the action of the liver; and 3, to relieve the kidneys of their extra work.

SOME REMARKS ON ECZEMA OF CHILDREN.

Read in the Section on Diseases of Children at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY WM. M. HOLTON, M.D.
NEW HARMONY, IND.

Infantile eczema is popularly known as milk crust, tooth rash, moist tetter, etc. The most frequent cause is, probably, a faulty assimilation of food. This may occur from disease or mental distress of the mother. In infants brought up by hand, or "bottle fed," faulty diet may cause gastric disturbance and eczema may result. A scrofulous diathesis is, probably, a predisposing cause. Excessive friction, from too free use of a fine tooth comb or a hard brush to clean the head of dandruff, or excess of either natural or artificial heat may irritate the scalp and produce eczema.

A collection of pimples slightly elevated above the surface is first noticed. The summit of the pimple is usually vesicular, and when broken by scratching, to relieve the intense itching which accompanies the eruption, discharges an irritating fluid, which causes the disease to spread, until not only the entire scalp may be covered, but the ears and face may be involved; indeed, in rare cases, the whole skin may be affected. The secreted fluid at first transparent, becomes opaque, afterwards purulent, and is often stained by blood flowing from lacerations made by the finger nails of the tormented infant. These discharges drying, form thick crusts, covering the diseased parts like a mask and, if the face is much involved, it is disfigured almost beyond recognition. The ears are often thickened, and deep fissures form behind them which almost threaten to detach the ears from the head and are difficult to heal. In the early stages of eczema the child may appear healthy, may even be plump and rosy, but usually the flesh will be less firm than normal and, as the disease advances, slight pallor and an unnatural whiteness of the eye is noticed; later the skin becomes dry, sallow and wrinkled, and the child looks prematurely old.

The mucous membrane of the mouth and nose is often affected, and in severe cases that of the throat and lungs may be involved. Indigestion and diarrhea are frequent complications. The submaxillary and cervical glands often enlarge and suppurate. Wilson, in "Diseases of the Skin," says: "Infantile eczema, when left to itself has no natural tendency to resolution or spontaneous cure. Without treatment it is liable to pass, after protracted suffering, into chronic eczema or, in other words, psoriasis infantalis." Notwithstanding the formidable character of this malady we can promise speedy relief and, in most cases, a permanent cure if proper treatment is adopted and faithfully carried out. Locally, apply an ointment of oxid of zinc, one part to six of simple cerate, or fresh lard; mix well; apply with gentle friction over the entire eruption. Let this remain a week; should it crack and the fluid exude, apply more ointment. After a week, soften the crust with an emulsion of yolk of eggs, cover with

cloths wet with warm water, when the crust can be removed; then continue the ointment as before.

During the time of treatment the use of comb, brush, or of water should be as limited as is practicable. It may be necessary to confine the hands to prevent scratching, but the ointment is soothing, and usually renders restraint unnecessary. As constitutional treatment, ½ grain calomel with 1 or 2 grains of bi-carb. soda, or calcined magnesia, given every night at bed-time is often all that is necessary. A suitable diet should be given, and as relapses are frequent the treatment should be continued for some weeks after the eruption disappears. In obstinate cases, give 2 to 5 drops of Fowler's Solution after each meal. Enlarged glands should be painted with tinct. iodin, and alterative doses of iod. potass, with syrup sarsaparilla compd., given three times a day. These scrofulous cases require protracted treatment, but the result has been, in my experience, satisfactory, and I rely on this treatment with the same confidence that I do on the use of quinin in intermittent fever.

ETIOLOGY AND PROPHYLAXIS OF DIPHTHERIA.

BY B. BECKER, M.D., F.S.Sc., LONDON.
TOLEDO, OHIO.

The Eighth International Congress of Hygiene and Demography, held at Buda-Pesth September 2 to 8, 1894, can be considered as one of the most remarkable and important reunions of representatives of the medical sciences from all countries during the latest times. This can be judged from the reports so far published.

One of the most important proceedings of the Congress was the discussion on the etiology and prophylaxis of diphtheria, which may be shortly related in the following:

Löffler, from Greifswald in Germany, says that diphtheria is produced by a specific bacillus, whose importance is not doubted any more by anybody. As diphtheria we can consider that affection only which is produced by the Löffler bacillus, excluding all similar affections which are caused by other microörganisms. In fact, we often find diseases of the upper air passages, which give the same picture as genuine diphtheria, but which are caused by an infection of streptococci, staphylococci or pneumococci and which, like the genuine diphtheria, can take a benign or a malignant course. The differentiation in diagnosis can only be made by bacteriologic examination, and all the statistics of diphtheria can not have any value as long as this differentiation is not strictly observed.

The course of an epidemic diphtheria depends on different factors: 1, on the quantity and the virulence of the diphtheritic bacilli; 2, on mixed infections by which the virulence of the bacilli is increased, or the organism weakened by the absorption of the products of secretion; 3, on the individual predisposition.

The bacillus of diphtheria is often found in the pharynx or in the nose of healthy individuals, its presence not producing any pathologic symptoms. It produces a disease only in those cases in which it is fixed on the mucous membranes. Lesions of the mucous membrane facilitate this fixation, and atmospheric changes, moist air, etc., seem to favor the development of the disease. In the majority of the cases, diphtheria is directly transmitted by contact, by cough, kisses, by hands which are soiled with the fresh secretion, but often also by food, linen, etc., even a long time after the infection.

The patient must be considered as dangerous to others as long as bacilli can be found upon the mucous membrane. Usually they disappear a short time after the healing of the local process, while in certain cases pathogenic bacilli are found in the pharynx and the nose after weeks. Enveloped in organic substances and with the exclusion of light the bacillus can retain its activity for months outside of the organism. Dirt, moist and dark houses therefore favorably affect the conservation of the bacilli and the spreading of the disease. The most favorable condition for such a spreading is found in accumulations of susceptible individuals, as in schools, etc.

As means of prophylaxis are especially recommended:

1. Cleanliness, dryness, ventilation and light of residences.

2. Hygiene of the mouth and nose; repeated gargarisms with solutions of chlorid of sodium, or bicarbonate of soda; cleanliness of teeth, extraction of diseased teeth; removal of hypertrophied tonsils.

3. Cold spongings of the neck.

Every suspicious case should bacteriologically be examined. Every practitioner should receive culture media from drug-stores or health offices to be simply inoculated and sent to the bacteriologic station. The report of all cases of genuine diphtheria, likewise of all suspicious cases, should be obligatory, and all the diphtheritic patients should be isolated. To possibly prevent the spreading of pathogenic germs, local anti-parasitic treatment should be resorted to, if the locality of the disease allows it.

The most effective preventive against the spreading of diphtheria is the prophylactic inoculation of those persons surrounding the patient, especially of the children. Numerous experiments have proven the harmlessness of Behring's curative serum (Heilserum) and its effect as a preventive remedy should be tested liberally in schools and families. Disinfection of the sick room and of all things which have been used by the patient should always be done. Convalescents from diphtheria should not come in contact with healthy people before the absence of the bacillus is proven by bacteriologic examination. In epidemics the laity should be enlightened by public instruction and publications.

Representing the French Committee, Professor Roux, from Paris, offered the following thesis:

1. Diphtheria is a contagious disease; the report of the cases must be obligatory.

2. Diphtheritic patients should be isolated.

3. The health officers have to provide for the proper disinfection of rooms infected by diphtheritic patients, of their clothes, linen and beddings; in short, of everything that has been used by the patients, toys included. During the sickness, the soiled linen, etc., must be disinfected before given out for washing.

4. Carriages, etc., used for the transportation of diphtheritic patients must be disinfected after each use.

5. Children who have had diphtheria should be kept from school until the physician has stated the cure and permitted the return to school.

6. When a pupil of a certain school is taken sick with diphtheria, the rest of the children should be under the observation of a physician for some time. All suspicious cases of angina should be excluded from school immediately. Special care is required for the sisters and brothers of a patient.

Besides these rules to be effected by official ordinance, the following principles should be generally adopted:

1. In order to employ an effective treatment of diphtheria the diagnosis must be made early. The beginning of the disease is insidious in many cases, and it would be overlooked less often by frequently repeated inspection of the child's pharynx. Mothers should make this inspection daily and the children be made used to it from an early age.

2. An early and sure diagnosis of diphtheria can only be made by bacteriologic examination, which therefore should be practiced by every physician.

3. Our knowledge concerning the effect of the antidiphtheritic serum is of such a kind at present that its prophylactic use can be recommended for children in families with a diphtheritic case.

EMPYEMA OF THE ANTRUM, AND HOW TO TREAT IT.

Read in the Section on Dental and Oral Surgery, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY EUGENE S. TALBOT, M.D.

CHICAGO.

It is not the intention of the author to enter into a minute description of the large number of skulls he has examined in the past few years, but simply to give some of the details of the more marked deformities so that our reasons for certain modes of treatment may be more clearly understood.

Gray says: "The antrum of Highmore or maxillary sinus is a large triangular-shaped cavity, hollowed out of the body of the maxillary bone; its apex directed outward is formed by the malar process, its base by the outer wall of the nose. Its walls are everywhere exceedingly thin; its roof being formed by the orbital plate; its floor by the alveolar process; its anterior wall by the facial and its posterior by the zygomatic surface. This conclusion must have been formed after an examination of very few symmetrical skulls, since the author has been unable to verify this description in all cases after an examination of 6,000 antra.

In order that the cavity may be opened in the proper place and drainage procured, we must possess some idea of its position and shape. I have examined skulls in which the shape of the cavity was just the reverse of that laid down by Gray. In others the antra were almost square with round corners, and still others it was almost impossible to describe, owing to the many deformities assumed.

Septa, bulgings, with corresponding depressions and deformities of adjacent cavities; sometimes the outer wall of the nose will be bent into the antrum from .25 to .33 per cent. of its space and *vice versa*. The size of the cavity also cuts quite a figure in regard to its position and relation to surrounding parts.

In neurosis and degeneracy one antra may develop to such an extent that it will be twice the size of a normal cavity. In such cases it is not uncommon to find the nasal cavities forced to the opposite side, and the antra of that side only the size of the end of the little finger and situated almost entirely inside the malar process. In such a jaw we should expect to find (in the case of the large antrum) very thin walls as described by Gray, but a far different condition exists upon the opposite side where the antra is very small. Here the walls are thick and a drill would have to pass from one-half to three-fourths of an inch through the alveolar process to reach it at all. Another condition, occasionally observed is, in cases of neurosis and degeneracy, the nasal cavities situated either to the right or left of the face crowd the antrum to one side and bring the floor of the nose directly over the alveolar process; in this case a drill passing through the alveolus would penetrate the nose.

The author has observed two cases where dentists, in attempting to drill through the alveolar process into the antrum with a view of draining it, actually drilled into the floor of the nose. At the time I made the remark that the operator displayed great ignorance in regard to anatomy of the parts. In conversation with specialists on the nose and throat, I have been informed that they have seen similar cases, and I have since learned by observation that we are all liable to the same accident, for the reasons which I have already described. Again, in some cases the antra are almost entirely obliterated. At least only a few cells not unlike the ethmoidal cells are situated at the upper border, while the remainder of the space is filled solid with cancellated bone tissue. Frequently the antra are divided into compartments by bony septa occasionally dividing the cavity into two or more nearly complete cavities. In such abnormal conditions it would be reasonable to suppose that the lowest point in the floor of the antrum would be difficult to find.

The opening into the middle meatus of the nose also varies in size from a crow's quill to a space large enough to admit the end of the little finger.

Difference of opinion exists as to the cause of empyema of this sinus. By some it is believed to be an extension of inflammation of the mucous membrane of the nose due to cold; by others, and especially by dentists to alveolar abscesses. With a view of obtaining some facts in regard to this matter, some years ago I made a special examination of skulls with the following results: Of the 6,000 antra examined, there were 1,274 abscessed molar teeth. Of this number, 76 or about 6 per cent., extended into and apparently discharged into the antrum. Septa were found in 963 cases. In the treatment of 384 cases of pulpless teeth in connection with the superior molars in the past twenty-four years, only four cases of diseased antra were observed. Dr. M. H. Fletcher, of Cincinnati, Ohio, examined 500 skulls or 1,000 antra, in which 252 upper molars had abscesses making 25 per cent. Of the 252 cases, 12 perforated the antra. Dr. Fletcher found, in 224 cases of pulpless molars treated by him, only one case of pus in the antrum. We must conclude, therefore, that diseased antra are rarely due to abscessed teeth. On the other hand, owing to the unstable abnormal development of the bony framework of this cavity which is always found in neurotics and degenerates, we would expect to find inflammation extending from the nasal cavities into the antra, (especially when the openings are large) as a result of cold. Neurotics and degenerates are much more liable to disease, par-

ticularly of the mucous membrane, than those who possess normal development. To drain this cavity, medical men, but more particularly dentists, have been in the habit of extracting teeth or the roots of teeth, and when no teeth are present, drilling through the alveolar process in a perpendicular manner to reach the antrum. As has been shown, the antrum can not always be reached by this procedure. From the extended examinations, made by Dr. M. H. Fletcher and myself, both came to the same conclusion without the other's knowledge, that the best place to open the antrum was at the base of the malar process midway between the root of the second bicuspid and first permanent molar, and illustrated in Fig. 1 B. In such a position the lowest joint in the cavity can nearly always be reached and also avoid the possibility of entering the nasal cavity.

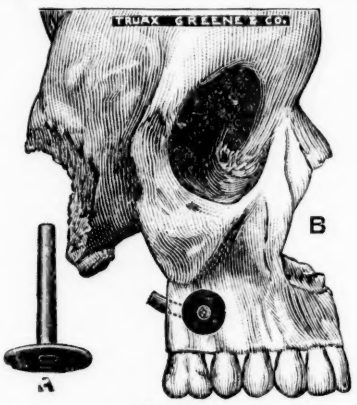

Figure 1.

One of the great difficulties in treating diseases of the antrum successfully, is to obtain proper drainage after the cavity has been opened. Cotton, ivory and wood are generally used and tubes made of gold and silver. Silver tubes corrode and become very disagreeable, while gold tubes are too expensive. Plugs are of little account because they defeat the object required.

The author has been quite successful with a tube made of hard rubber, as illustrated in Fig. 1 A. They have the advantage over any I have ever used, in that they can be kept in stock at reasonable prices, softened in hot water, and molded to any position required. The flange can be trimmed to any shape and degree and the tube cut at any length. The cheek holds it in position, it can be kept perfectly clean and be readily adjusted when the opening is made through the alveolar process and fastened to a tube if necessary.

Figure 2.

DISCUSSION.

Dr. Younger—The paper is an excellent one, and I believe the method of opening into the antrum which it describes the best to be found. Two years ago a case came into my hands, in which a tube used to secure drainage from the antrum had been allowed during its removal to slip into the cavity. The patient was a lady 74 years of age. Immediately, though without alarming the patient, an endeavor was made by the surgeon in charge to recover the tube. Chloroform was given, the patient was kept under its influence for two hours, and for an hour and a half the search was kept up, but without avail. Some months later on my return from a somewhat prolonged absence from the city I was called in, and found the patient much worse and steadily growing feebler. I thought it probable that a part of the tube was still in the antrum but I was unable to find it, although I used cocain, enlarged the opening, and searched for an hour and a half. The operation, however, benefited the patient and for a while she seemed better, but the old symptoms soon returned. I again operated, having in the meantime concluded that the missing tube was behind or over the inferior turbinated bone, and for the purpose of searching for it had a probe made with which I could thoroughly explore every portion of the sinus. The tube was found in fifteen minutes.

Dr. Dean—Was there any local formation of pus or local inflammation, and general rise of temperature?

Dr. Younger—We supposed so, on account of the improvement in the patient's condition after the operations.

Dr. Bonwill, Philadelphia—While I have performed many operations about the antrum, I have had but three cases of disease of the antrum which came from the teeth. It is a question how far we, as dentists, may treat antral cases, because they have given so much trouble to the best general surgeons. Much as I love a tooth, and much as I try to save them under almost all circumstances, I think I should prefer, in case of antral trouble, to extract a tooth so as to have plenty of light. It is well not to make unnecessary extra openings in surgical operations; if there is already one, we should try not to make more. After opening the cavity we ought to be able to drain it thoroughly. If this can not be accomplished with cotton then wool may be used, which does very well in many cases. Then, unless there is diseased bone to be removed, we ought to be able to medicate readily.

Dr. Van Orden—I have sometimes asked myself if I am always able to recognize antral trouble. In this connection I recall a case in which, if I could get it back into my hands, I should certainly attempt to cure a bad case of nasal catarrh by an operation upon the antrum. At the time this case came to me I treated it, the condition improved, and it was sent to a specialist who didn't seem to pay much attention to it. Dr. Talbot says that only a moderate number of abscesses in the upper jaw complicate the antrum. Would not the engine-point be less painful in operations upon the antrum than the instrument which Dr. Talbot describes, and therefore preferable for use in opening into it?

Dr. Talbot—Yes. The paper stated that the instrument referred to was for the use of physicians and surgeons who do not have the engine.

Dr. Walter F. Lewis, Oakland, Cal.—Most of the gentlemen present recognize the necessity of having this subject well aired. I move it as the sentiment of the Section that Dr. Talbot's paper should be read before the Dental Congress next week.

The motion was adopted.

Dr. Talbot—I have tried to point out, both in the paper now under discussion and in the remarks which I made upon the chairman's address, that it is only by hard study that dentists can hope to improve the scientific basis of their profession. This paper now under discussion has been eighteen years in preparation, and to reach the deductions stated in it required the examination of over twenty thousand skulls in this country and in Europe. There are facts given in that paper which were never before publicly stated. Dr. Fletcher, as the result of an entirely independent examination, agrees with the conclusion that the antrum can not be depended upon as to size; that is, whether it is as large as one's little finger or as large as a hen's egg, and extends over to the roof of the mouth can not be determined from appearances. I have seen skulls from which it would have been impossible to extract a tooth on one side of the mouth without going into the floor of the nose. Both myself and Dr. Fletcher reached the conclusion, each without the other's knowledge, that the point named in the paper, between the second bicuspid and first permanent molar, is the proper place to enter the antrum in operating. You must not lose sight of the septum which divides the antrum into two chambers. If you go up into only one antrum, the patient's head should be laid first on one side, then on the other, so as to drain both antra thoroughly. Treatment after opening should be simple. Cleanse out with syringe, using warm water or a weak solution of listerin or boracic acid, or something which will not injure the mucous surface. Many specialists use too strong remedies. Very simple treatment only is needed; cleanse thoroughly with warm water and let nature do the rest.

In reply to queries, Dr. Talbot said that in disease of the antrum the dentist should take entire charge of the case, which he should be competent to treat. I do not consider a man a real dentist who can not do so, though I fear there are comparatively few who are able to treat such cases successfully. I would not attempt to open into the antrum without knowing that it was necessary. I might go so far as to extract a tooth, but should then wait two or three months, if there was any doubt, to give time for a cure of the trouble by nature's help. Then, when sure that it was required, I should make the opening. In mild cases of antral trouble where transmitted light gives no indication I should treat the patient constitutionally, keeping the bowels open and building up with tonics. Ninety-nine out of one hundred such cases are due to inflammation of the mucous membrane, as from the effects of grip or the inhalation of extremely cold air.

DR. C. S. LANE, Oakland—Is the drainage tube a necessity in cases where the antrum is opened? Will it not take care of itself without this aid?

DR. TALBOT—The mucous membrane heals up very quickly if allowed to,—sometimes in twenty-four hours.

DR. LANE—Some surgeons say that it never heals, and my experience is that unless we do something to assist it, it does not readily heal. The idea advanced by Dr. Talbot seems new and well worth thinking of.

DR. DEAN—By this tube which Dr. Talbot shows, we have practically a valve which prevents the ingress of *débris* from the mouth. I do not feel able to discuss this paper to-day. Ask me a year from now and I may be able to say something upon it.

PYORRHEA ALVEOLARIS.

Read in the Section on Dental and Oral Surgery at the Forty fifth Annual Meeting of the American Medical Association, held at San Francisco, Cal., June 5-8, 1894.

BY W. J. YOUNGER, M.D.

SAN FRANCISCO.

By this name, I mean that condition in which there exist patches of a slate-colored calculus partially or entirely encrusting the roots of the teeth, with the alveolus more or less destroyed and the surrounding gums deep red, retracted and congested — though sometimes attenuated; usually yielding pus at the cervical margin between it and the tooth, but this feature is sometimes absent.

This incrustation is firmly adherent to the cementum, for no pericemental tissue is ever found between it and the cementum. When removed it comes off in scales, leaving the portions of root from which it is detached, clean and white. This is true of the calculus on the shaft of the root, but that which is found around the apex of the fang is very difficult of removal, as it does not scale but has to be dragged off piecemeal or dissolved by chemicals.

This is not in consequence of any difference in the character of the tartar, but in the fact that the apices of the roots are not smooth like the sides and present a roughened surface and therefore a more secure attachment to the calculus.

In consequence of the waste of the bony walls of the socket, when this disease has progressed to any extent the teeth will be found loose and tender on pressure and frequently raised in their sockets or forced out of their position—usually towards the side opposite to the location of the tartar. If the disease is allowed to progress to a conclusion, the teeth will drop, or fall out, in consequence of their attachment to the alveoli being entirely destroyed.

The etiology of this disease is as yet surrounded in mystery, though the professional opinion is strongly drifting into regarding it as of constitutional origin; and the deposit of calculus (which is the bane of the disease and always present, some writers to the contrary notwithstanding) as being of hemorrhagic origin, due to imperfect nutrition and connected with a gouty diathesis.

That it may be connected with malnutrition may be true, for no organ or tissue can become diseased while it is properly nourished; or that the condition may be aggravated or modified by constitutional disturbance or cachectic state is also palpable; but sufficient proof has not yet been adduced to establish the theory that pyorrhea alveolaris is of constitutional development and especially due to a gouty diathesis.

On the contrary, my experience with this disease (covering a period of over thirty years) has convinced me that it is of purely local origin; and I am very much inclined to the opinion I promulgated some ten or twelve years ago at a session of the California State Dental Association, that it is due to a diseased activity of the pericementum caused by disturbed nutrition or a local irritation,and that instead of bone it produces this disorganized abortion, vulgarly called tartar; itself perishing in the effort by the irritation of its presence.

This is the reason why pericementum is never found under the calculus. And this theory is strengthened by the fact that the constituents of tartar are analogous to that of bone, and why the pericementum is never in contact with the margin of the calculus. For there is always a denuded strip of root between it and the membrane.

While the irritation inducing the formation of this calculus may proceed sometimes from or be caused by the blood (as for instance the impaction of a capillary thrombus) I think it usually due to some irritant acquired from without. For the deposit is first formed near the cervices of the teeth, most frequently upon the approximal surfaces under the lingual margin where food and seed, etc., are most apt to lodge.

It is only in mature life and advanced age that we find it near the ends of the fangs; but in young or old one thing is certain; that between the alveolus and the root there is always free communication between the calculus and the cavity of the mouth. This condition, which in my long experience I have found invariable, shows the probability of some migrating germ or substance from the cavity of the mouth being the original or exciting cause of the mischief.

Now were this disease of constitutional origin there certainly would be many cases in which there would be no lesion whatever between the gum tissue and the neck of the root. The pus seeking egress would pierce the alveolus and the gum just as in alveolar abscess. This would at least go to show that pyorrhea is not always due to an extraneous irritant. But even then it would not prove a constitutional origin and my theory concerning a diseased activity of the pericemental membrane and the lodgment of a capillary thrombus would be a better explanation. Moreover, I have found this disease to exist in an advanced condition, in persons who had always been exempt from any constitutional ailment whatever; who had no gouty or rheumatic diathesis either by inheritance or acquirement (at least had never developed any,) who never had indigestion or any form of dyspepsia, and who had (to use their individual expression, "the stomach of an ostrich" and had never been sick a day in their lives.

It was the consideration of such cases that made me once call pyorrhea alveolaris a "disease of good

health." Another thing that tends to prove the disease is local is the fact that when once it is cured and the gums are made to re-attach themselves the disease does not return to them, no matter what cachectic condition may exist in the system.

As uric acid exists in the blood of the gouty, it is not to be wondered at that in persons of this diathesis, traces of the urates should be found commingled with the calculus of pyorrhea; for any disturbing cause, such as tartar, that induces excitation and flow of blood to a part will almost of necessity acquire a deposit of whatever the blood is freighted with; and therefore the uric acid which Professor Peirce found in some of the calculus and upon which he based his assumption, that the calculus was the result of a gouty condition, was simply the natural outcome of the presence of an over-supply of blood, and had nothing to do with the origin of the calculus.

But the best way to try a theory is to test it clinically; and if, for instance, in pyorrhea alveolaris it is found that the disease can be prevented or cured by constitutional treatment, then we must regard that disease as of constitutional origin. But if, on the other hand, you find a local disturbance or lesion yielding to local treatment, solely, and remaining cured regardless of any systemic pathologic condition, then you may reasonably conclude that this disease is local. And from my experience with pyorrhea alveolaris, I would as soon think it of constitutional origin, as I would that corns, bunions and freckles are of systemic development.

And now to consider some cases in point:

A lady who had a decidedly gouty diathesis, through inheritance (so marked that her finger joints became tender and swollen and the deposit of uric salts was being continually formed in the follicles of her throat) went to a friend of mine, one of the cleverest men in the profession, to have three upper molars, two on the left and one on the right in nearly the last stages of pyorrhea alveolaris, treated and filled. Their roots were so thoroughly incrusted with tartar that they merely hung in their sockets by their apical extremities, and they were all more or less decayed, but especially the right molar, for it had a cavity extending almost to the pulp. She had also suffered for two or three years from frequent attacks of nervous prostration, and the impression commenced to grow that this condition was due, in a measure at least, to the state of her teeth, which in consequence of their looseness and tenderness made it impossible for her to masticate properly.

This gentleman advised her to have these molars drawn immediately for the sake of her health, as he considered it impossible to save them, but as the lady would have to substitute artificial dentures she demurred, and hoping to spur him on to some effort to preserve them she remarked: "I think Dr. Younger could save them!" "Madam," was the retort, "neither Dr. Younger nor God Almighty could save those teeth. They are so loosened by disease, I could pull them out with my fingers!"

The idea that God Almighty should not be able to save them grated on her religious sensibilities, and she determined to wait until my return. I was then on my way home from Berlin, and one of the first persons to consult me on my arrival was this same lady. Having made a specialty of just such cases, I commenced treating her, ignorant of the judgment that had been passed upon the teeth by my esteemed colleague. She feared to tell me until the cure was effected, lest it might prejudice my efforts. In six weeks the teeth were firm and the alveolar tissue strongly adherent throughout their full extent, certainly around the cervices.

It is now nearly four years since the cure was completed, and though the finger joints still swell and become tender and the uric incrustations still form in her throat, the teeth have had no return of the trouble; they are perfectly rigid in their sockets, and there is nothing in their appearance, nor in that of the environing gums, which would suggest the lesion which had been so nearly fatal to their existence. Now no constitutional treatment was made, the success being due entirely to local applications.

Some eight or nine years ago, at a meeting of the State Association, the subject of pyorrhea was in discussion and there was an almost unanimous opinion expressed that this disease could not be cured and that the cures I mentioned could not have been "true pyorrhea." While I was on my feet arguing this, Dr. Cummings of this city came to me, saying: "Can you cure me?" and opened wide his jaws. His teeth were all loose, the swollen gums had retracted from around the roots for an eighth of an inch, and pus was flowing at the slightest touch. I replied: "Yes, if you will permit me to clinic on you before these gentlemen, and prove to them how wrong they are." I then called the attention of the convention to the condition of Dr. Cummings' mouth and asked them to tell me what the matter was. With one accord, they said, "pyorrhea." "Bad case?" "Yes, a very bad case." "Now, gentlemen," I said; "the proof of the pudding is in the eating. I will treat Dr. Cummings before you, and at our next session you will see whether pyorrhea can be cured or not."

I gave the Doctor half a dozen treatments, all local, and the disease quickly yielded; and though eight or nine years have passed since then, there has been no return of the disease, and the teeth and gums are firm and sound.

A few years ago, I commenced treating a gentleman of mature years for pyorrhea. He was also being treated for gout. The pyorrhea was on a fair way to cure, when one fine morning he told me that his physician had informed him that my local treatment could not possibly save his teeth; that the disease in his gums was the result of gout, and had to be treated constitutionally. He therefore dropped me and stuck to his physician; who was a very learned man with a microscope. The result was he was relieved of his gout, also of his teeth, for under the "constitutional treatment" they all dropped out! Had he stuck to me, alone, he would have had his gout, but he would also have had his teeth. He should have stayed by both of us, and now he would have his teeth and be minus his gout.

It is a fortunate circumstance that a knowledge of the etiology of pyorrhea alveolaris is not a necessary factor for its cure. There are few lesions in surgical pathology simpler of treatment than this same disease; the most essential requisite being skill and manipulative dexterity, in order to secure the thorough removal of the calculus and the perfect cleansing of the root. The elimination of every particle of tartar is a *sine qua non* to success. Unless this is done perfectly and absolutely, the disturbing cause of the disease will not be eradicated and it will in time return.

The return of the disease that so many complain of is due very often to the fact that the complete removal of the tartar has not been accomplished, and that the surface of the roots has not been thoroughly cleansed. The appreciation of tartar, however, is not always easy and it requires a certain sensibility in the fingers not common to all persons.

It is that touch which makes one violinist superior to another in the development of the tone of his instrument. This is the reason why so many have failed to discover tartar when it existed, and why it has led them to suppose that either the tartar had been completely removed or that the pyorrhea existed without the tartar. There is, besides the sense of

feeling, an acuteness of hearing by which one can recognize by sound, as the instrument passes over the root, whether it is the substance of the root or an incrustation.

But before the removal of the tartar is attempted, the mouth and crevices and the little pockets containing the tartar and the calculus itself, should be thoroughly sterilized. I prefer the bichlorid of mercury, 1 to 1000. It should be used warm, at least that portion that is injected around the necks of the sensitive teeth, in order to prevent the pain that cold applications are almost certain to produce. The sterilization is necessary to prevent the absorption of septic matter, as the gum is almost certain to be abraded by the instruments used to remove the tartar. For the same reason the instruments should be thoroughly sterilized. The water used as the menstruum for the sterilizers should have been subjected to distillation; otherwise the organic matter and chemicals which are apt to be in ordinary water may be sufficient to decompose or to modify the strength of the sterilizing agent and so negative its action. But, by all means, be sure and sterilize the instruments! Keep them continually in the antiseptic fluid while laid out for use.

When removing the calculus, begin with one tooth and *stay* by it, until all of the tartar is removed, even if it takes the full time of the sitting. And as fast as the tartar is scaled off, wash it out with the warm fluid by syringing with delicate platinum pointed syringes. If this is not done, minute pieces of the tartar will adhere to the raw surface of the gum, keep up an irritation, and prevent the healing process from being established. It is well, when the pockets are very deep, to insert a little lactic acid to dissolve the diseased edge of the alveolus and any minute fragment of tartar which may have escaped the instrument.

The root being thoroughly cleansed, and the *débris* washed out of the pocket, a little tincture of iodin may be dropped into it, or else a solution of chlorid of zinc, three and one-half drachms to the pint of water, to stimulate its contraction and the production of granulations, and to induce the attachment of the alveolar tissue and gums to the root. If this does not take place, then rub quickly with a little wad of cotton saturated with liquor ammonia, washing out immediately with warm water. This ammonia is to remove the mucous membrane from the healed and therefore unattachable surface of the gums; and the water, to wash it off before its escharotic action can be established. By this means a healthy granulating surface is formed, contraction stimulated, and attachment to the clean surface of the root induced. In case the gum should remain flabby, inactive and indolent, then acupuncture should be resorted to. This can be done by rapidly piercing the gum with a sterilized needle. When the amount of the deposit is so great that the alveolar septi have been destroyed, pass a threaded needle through the gums and between the roots of the teeth and approximate them by tying them as nearly together as can be done, without the use of much force. If too much force is used the thread will cut through the gums.

In the case of one lady of 55, the accumulation of tartar was so great that the septi of both gum and alveoli from the first bicuspid of one side to the first of the other were destroyed, and the labial and lingual walls of gums simply leaned against the teeth when the mouth was in repose, but left them instantly when the tongue or lips moved. For instance, when the lower lip was pushed down, all the wall of the gum upon its aspect went forward with it, leaving the roots of the teeth entirely denuded of gum upon their front. When the tongue was raised or retracted, the gum upon that side moved away also, leaving bare the teeth upon the lingual surface. And when the tartar was removed the separated teeth leaned in every direction.

I gave the gums the ammonia treatment; held them in position by means of ligatures through the interdental spaces; kept the mouth in an aseptic condition by the repeated use of the sublimate, every two hours. In a couple of weeks I had the gratification to see the spaces filled with granulations as high as the margins and firmly binding the two layers of gum into one continuous mass.

This case was reported to the State Dental Association and to the Surgical Section of the Ninth International Medical Congress in Berlin.

The reason for treating the teeth one by one—that is, completing the removal of the tartar and all that has to be done, at one sitting, is that the process of healing should not be interfered with after it has commenced, and also because there is the object of getting, so far as possible, the benefit of healing by first intention.

By the subsequent use of antiseptic washes, until the healing process was entirely accomplished, I have succeeded in curing the most desperate cases of pyorrhea alveolaris, and of restoring to perfect use, teeth that have been for years worse than worthless.

There is only one condition in which I have found failure, and that is where there is a dead pulp in connection with an incrusted apex. This condition is found almost exclusively in the palatal root of the superior molar, and the difficulty in the way of a cure is due, not so much to the tenacity or quality of the tartar, as it is to the septic condition of the substance of the fang, the putrescence of the pulp having invaded tubuli and canaliculi and destroyed beyond hope of restoration the vitality of its tissue, and thereby its ability to re-form attachment.

As the diseased pulp is usually confined to the palatal root—that in the buccal being usually healthy—my treatment in these cases has been to open into these roots, remove their pulps, fill them and amputate the palatal; then grind away enough of the articulating surface of the crown, immediately over the removed root, in order to bring the pressure in the effort of mastication upon the buccal roots. By these means, these teeth can be made comfortable and serviceable for years, if not for a lifetime.

In eleven cases of pyorrhea reported by Dr. C. N. Peirce and Dr. Albert Brubaker, wherein they sought to establish their theory that uric salts were found in the incrustations of what they call "true pyorrhea," in but five of these eleven cases were they able to discover traces of uric salts. Now, although exceptions are said to prove the rule, where the exceptions are more numerous than the rule sought to be established, the exceptions govern the rule. Therefore, the cases decided by Drs. Peirce and Brubaker are not sufficient to establish a theory on which to base their assumption and their conclusion.

There can be no local lesion or irritation which is not more or less affected by the state of the system, that when vitiated will prevent the healing of an otherwise simple sore which under normal conditions would yield readily to local applications.

Dr. Brubaker makes a statement that the deposit of uric salts upon the end of the roots is being "continually renewed." One would infer from the term

"renewed" that the deposit is absorbed and more salt re-deposited; but as such a statement would be absurd he can not possibly mean that. The only inference to be drawn then, is that if the deposit is removed by instruments or chemicals, a fresh deposit of the uric salts would take place, and thus a source of irritation would be continually kept up. Now both Drs. Peirce and Brubaker claim that this condition only takes place in the apex of the fang; but why should it be limited to the apex of the fang? The same exact tissue surrounds the sides of the roots as that which envelops the end. Then why limit this particular action to this particular locality?

The fact is that, when a deposit incrusts the entire end of a root, the irritation set up by its presence results in the death of the pulp, and this condition with the greater vascular activity set up by the propinquity of the calculus to the larger blood vessels entering the foramen of the apex causes in a greater degree a deposit of any salt the blood is freighted with. Therefore, in the few cases in which an examination revealed the presence of the urates such a presence was but a natural conclusion, and the only wonder is that the salts were not found in the entire eleven cases cited instead of only in five.

I do not know why it is that Dr. Peirce calls that condition, only, where the calcic formation surrounds the apex of a root, "true pyorrhea alveolaris." This condition exists so rarely when compared with what he calls ptyalogenic calcic pericementitis (but what is known to the profession as pyorrhea alveolaris) that it reminds one of a fanciful name given by early settlers to a certain region in this State, "Strawberry Valley," for the reason that there were no strawberries in the valley! If he wished to make a distinction between the calcic formation on the shaft of the fang and that of the apex he should have left that general condition known as the "true pyorrhea" and given a name to the special condition.

But why is it that this special condition exists almost, if not entirely, on the palatal root of the first superior molar? It is easy to be seen from the fact that the palatal root of the first molar spreads more than that of the multi-rooted teeth. That the tissue over them is more attenuated than it is over the roots of the other teeth, and that they are therefore more affected by thermal changes than the other roots; that the pressure of the tongue and the superimposed food is greater upon these roots; in fact, that the impact of food is stronger on these roots than on any other. They are, therefore, more exposed to changes and vicissitudes than the buccal roots of the same teeth; or of the roots of any of the other teeth. That is the reason why we so often find these roots more denuded and exposed than the other roots, and why the pulps in these roots are more susceptible, in consequence, to abnormal changes and death.

In concluding this paper, perhaps it would be well for me to summarize the arguments for and against the theory of pyorrhea alveolaris being due to constitutional diathesis. The arguments in favor of pyorrhea alveolaris being of constitutional origin are what?

1. That it is found in persons afflicted with gouty diathesis.

2. That traces of uric salts are found in the calculi of some of the people afflicted with the gouty diathesis.

3. That the condition of irritation in the gums and around the roots, and the discharge of pus, are modified by constitutional treatment.

In opposition to this we find:

1. That pyorrhea is found in persons having no constitutional cachexia or diathesis.

2. That if it were of constitutional origin it would be found in all, or at least in nearly all cases having the gouty disposition.

3. That the amelioration of the irritation by constitutional treatment is what would occur in any local irritation when the system would be placed in a healthy condition.

4. That if it were of gouty diathesis the deposits from the saliva would also be impregnated with these urates.

5. That, if it were of constitutional origin, constitutional treatment would be necessary for its cure; but, instead, local treatment is found sufficient for its complete eradication, notwithstanding the constitutional ailment is continued in undiminished force.

6. In all cases of pyorrhea alveolaris we find a connection between the calculus and the cavity of the mouth, which would not necessarily be so if it were the result of a constitutional pathologic state.

Besides these points, Dr. Van Woert asserts that the disease is communicable by infected instruments which, if true, would prove a very strong argument against the theory of constitutional development.

DISCUSSION.

Dr. C. S. Lane, Oakland—These papers are of great interest to those of us who are in active practice, meeting with cases of the characters described every day, and studying to overcome the conditions as we find them. The difference in the positions taken by the writers is an evidence that great minds do not always see things in the same light. One thing that strikes me practically in this disease, is that in some cases I can overcome the condition by local treatment; by a thorough removal of the deposit the way is paved for a thorough cure. In some instances the cure is not so thorough. I have always striven to be very careful in the local treatment of this disease, and yet I find some cases where I can not put a stop to the suppuration, more especially in diabetic patients. I have now one case under treatment which has been in my hands over three years; I have carefully watched the reported discussions on this disease by the leading practitioners, and though I have tried everything that has been suggested I have been unable to arrest the progress of the disease; so that I can not think in this case the cause can be considered due to local conditions, or that its persistence is due to any lack of proper sanitary conditions or local surgical treatment. Many cases of pyorrhea alveolaris can be treated locally successfully, but there are others, especially among patients with diabetic troubles, for the cure of which you have to go farther than merely local treatment.

Dr. Younger—A case which occurred lately in my practice is called to mind by the remarks of Dr. Lane. A lady, in an anemic state, presented just before an expected six weeks' banishment from the pleasures of the world, with pockets discharging pus around several of the teeth. On careful examination a slight rim of tartar was found near the alveolar process, the disease having progressed on one of the teeth to within an eighth of an inch of the apex. This tooth was so loose that every breath waved it to and fro. I spent one and one-half hours on each tooth, carefully removing every trace of the deposit, and the disease was cured. I used iodin in the treatment. One thing to be borne in mind in the local treatment of these cases is that plenty of time must be taken to each tooth; otherwise you will fail. I think that in the disinclination to do this is the cause of failure frequently. Then again you must have the natural touch that will enable you to know absolutely when the removal of the deposit is accomplished. I know of no other reason why I am successful in the treatment of these cases than the possession of this touch and the taking of the necessary time to do the work thoroughly. You all know me, and you know that I am honest in the opinions I express, and that I take the ground I do, only

because I believe it will be for the benefit of the profession. One reason why I have given the clinical treatment of pyorrhea alveolaris in detail is because I believe the cure is to be found in the careful manipulation of the instrument point, rather than in high scientific theories. I have also received letters from different places, among them Bombay and Krakow, asking how I treat pyorrhea, and this seemed a fitting opportunity to give a general reply.

DR. JOHN C. MCCOY, Santa Ana—How do you keep patients still for one and one-half hours?

DR. YOUNGER—By not hurting them. I obtund the sensibility of the tissues so as to cause only the minimum of pain.

DR. RUSSELL H. COOL, Oakland—I have seen Dr. Younger operate, and his fingers are certainly sensitive. As he says, the proper removal of the deposit in pyorrhea alveolaris requires delicacy of touch; the deposits are tenacious, and you must take whatever time is necessary to remove them. I thought it impossible years ago to cure this disease by local treatment alone, but I have seen cases so cured by Dr. Younger. He mentions warm water in his description of the treatment. He should have said hot—at least as warm as the patient can bear, in connection with the bichlorid. Pyorrhea does not spring up in a night, and I have noticed in young patients, especially, you will find a single pocket, to dislodge the deposit from which requires but little pushing. If neglected, however, we find it spread from this incipiency till it involves several teeth. The successful man is he who treats the disease in its incipiency without waiting till diabetes is established and the man is on the verge of the grave. You sometimes find in these cases a little abscessed cavity along the course of the pocket. A surgical opening will give room to medicate and treat this.

DR. I. N. DEMAREST, Santiago, Chili, was here introduced to the Section, but he excused himself from making any remarks).

Dr. G. S. DEAN, San Francisco—I would like to ask a question. Dr. Younger and Cool, and perhaps Dr. Dunbar also, have referred to the occurrence of an abscess between the gingival border and the apical space. Do they mean an actual abscess?

Dr. R. H. COOL—I meant a sinus containing pus. In one case which I recall at the moment, there was such a sinus on the labial surface of one of the teeth. By cutting through the alveolar plate, I opened into it and then treated the same as any other abscess.

DR. DEAN—I want to call for more testimony. Abscesses which are not apical, we may perhaps call gingival abscesses.

DR. EUGENE S. TALBOT, Chicago—We have heard both sides of this question—the local and the general—in the papers which have been read, neither of which, however, classified the various forms of pyorrhea alveolaris. I have certainly seen three different conditions which properly come under this name. First, there is the local deposit from the salivary glands; then the serumal deposit directly from the capillaries; and last, a condition which I must say is constitutional, because there is no deposit whatever. I can't harmonize this last with Dr. Younger's conclusions; I don't care if he don't hurt the patient, and no matter if he does take one and one-half hours to each tooth. Take a case of serumal tartar. If Dr. Younger can remove all the deposit, I can not. I don't even know when it is all removed. Take a mouth in which there is a set of good sound teeth, but in which this disease has affected the second molar to within one-eighth of an inch of the apex, the tooth being in consequence quite loose, while others are just beginning to become loose, from the effects of serumal tartar. We will clean that loose tooth thoroughly. We find the ends of the roots exposed and the tooth itself held in the process by one root only. We clean the teeth as well as we can, and in one month's time the patient comes back with the tartar extended all around the mouth. If we remove that loose tooth, treat as before, and watch the case, we can save the other teeth; but as long as that loose tooth remains in the mouth it forms a nidus or rallying place for the destructive forces. I have had that experience over and over again. In the third condition to which I have referred there is no deposit. I have seen cases of this kind where the teeth were loose, and I tell patients from the start that nothing can be done by local measures, and I simply treat them constitutionally. They become built up and the trouble abates; then they stay away for three months and come back all run down with the old condition renewed. I have had other cases where the condition was inherited—not the pyorrhea but a predisposing condition of the system which was handed down from generation to generation. As long as we practice dentistry as we do to-day, we give evidence that we don't know the principles underlying this disease. We have to get a better knowledge of it. I believe pyorrhea alveolaris is a constitutional disorder, and that it is not due to uric acid in the system, but that the liver is the cause of it and we have to get down to treating that before we can master this disease. It arises from an inherited condition of the liver and not until we know more about the treatment of the liver than we now do shall we know how to really cure pyorrhea.

DR. YOUNGER—Dr. Talbot asserts that we are as ignorant about pyorrhea alveolaris to-day as we were twenty-five years ago. I would like to know what is known in medicine about for instance, the function of the spleen. I would like to know what the medical profession has taught us about the origin of disease. I think we do know a great deal more about pyorrhea than we did, and that we are able to treat it better.

DR. BONWILL—I don't like to repeat here what I have just said before the Odontological Society of Pennsylvania where the subject was recently discussed. The majority of dentists don't know how to treat pyorrhea alveolaris. I stated my ideas two years ago in combating the idea of a calcic diathesis being the cause. I agree with Dr. Younger in everything he says, but I go a step further than he does. Dr. Younger looks at the matter in a common sense light. Nothing shows more plainly the uselessness of the dental profession as an appendage to the medical than this one subject. Dr. Younger sees a phenomenon—tartar on the roots of the teeth, which is the true cause of pyorrhea. I have had forty years' experience in the practice of dentistry, and I should be ashamed to have a case of pyorrhea in a mouth of which I had entire control, because I would say it was my fault. In forty years' practice I have not a single case of a regular patient of mine that had pyorrhea. There must be perfect cleanliness. Dentists too often neglect this first important requisite of cleansing the teath and keeping them clean. The first thing to do before daring to touch a tooth to operate upon it is to see that the mouth is clean. Half of my cases of this disease are the failures of other men. I recall at the moment the case of a patient who came to me after he had been to a number of medical men who told him he would lose all his teeth. Three of them were in fact so far gone that they had to be extracted, but the others were saved. If you cleanse these teeth one by one, take away all the dead tissue the same as Dr. Younger does, cut off the superabundant gum, and cleanse thoroughly they will get well. I have never yet in forty years given a patient constitutional treatment for this trouble. If, after having put the teeth in proper condition you teach patients proper habits with regard to their teeth, there will be no return of the disease. I cleanse the whole upper set if it is at all affected, at once, even if it takes the whole day; cut out the superabundant gum, and don't meddle with nature after giving her a chance to do the work of repair. The gums will again hug up to the teeth. For treatment, there is nothing better than creasote and I now use carbolic acid and not diluted. I attribute much of the cause of pyorrhea to bad dentistry. In almost every mouth under the regular care of the dentist you find that teeth have been extracted in early life; or that that they are cut apart on the approximal surface and filled with flat filling, cutting away the gum to make room. Overhanging fillings at the cervix, amalgam fillings that their author ought to be ashamed of, crude and rough as they are—will destroy the membranes around any tooth. Gold crowns which are not fitted properly or finished fine at the edges are also factors in this disease. Then the rubber dam must be tied on or held up beyond the gum margin, and is another cause of trouble at the cervix. There are many other causes which may help to originate this disease, but those I have mentioned are enough to give my ideas. I am a crank on articulation, for instance. If there is anything which helps out in these cases it is seeing that the articulation is correct. I always take an impression and then knowing the law of articulation, with a little study I can see just where to touch the teeth and correct any deficiency. I am against the principle of the so-called gouty diathesis, and in treating teeth I never cut away too much, but rather too little.

Blank Applications for membership in the ASSOCIATION, at the JOURNAL office.

PREVENTION OF DIPHTHERIA FROM THE STANDPOINT OF THE HEALTH OFFICER.

Read in the Section on State Medicine, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY U. O. B. WINGATE, M.D., M.M.S.S.

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In presenting this short paper I do not claim to offer anything original or new, but merely to give the results of my observations and suggest points that may be profitably discussed.

Prevalence.—The wide-spread and variable prevalence of diphtheria is of great interest to the health officer. Rural statistics avail us nothing in this country, as a rule, but statistics of death from this disease in our larger cities are fairly reliable. There is one feature, however, that has not yet generally entered into our statistics that may modify them somewhat, that is, the prevalence of croup and what proportion of cases of so-called membranous croup are cases of diphtheria. The recent researches of Dr. H. M. Biggs, of New York, which show that nearly 80 per cent. of cases of so-called membranous croup were found to be cases of true diphtheria by a bacteriologic examination, are of great importance to the health officer and demand a most earnest and careful consideration. I believe all cases of croup presenting exudation in the throat should be treated by the health officer as true diphtheria, unless a bacteriologic examination proves it to be non-diphtheritic. This would seem to be, in our present state of knowledge, the only safe procedure, for certainly if there be a doubt in regard to the care and treatment of infectious diseases the public should have the benefit of it.

The following is a table showing the per cent. of deaths from diphtheria, on the estimated population during the years 1892 and 1893, as officially received from a few of our larger cities in this country:

New York	1892	0.08	1893	0.10
Chicago	"	.07	"	.06
Philadelphia	"	.13	"	.08
Brooklyn	"	.08	"	.06
St. Louis	"	.04	"	.04
Boston	"	.09	"	.10
Baltimore	"	.08	"	.04
San Francisco	"	.07	"	.05
Cincinnati	"	.09	"	.05
Buffalo	"	.06	"	.05
Cleveland	"	.07	"	.04
Washington	"	.07	"	.04
Pittsburg	"	.11	"	.06
Milwaukee	"	.16	"	.08
New Orleans	"	.02	"	.03

It will be observed, by this table, that in 1892 the largest death rate from this disease in fifteen of our largest cities was in Milwaukee, Philadelphia and Pittsburg, being .16, .13 and .11 respectively; and the smallest rate for the same year was in New Orleans, St. Louis and Buffalo, being .02, .04 and .06 respectively. While in 1893, the largest rate was in New York, Boston and Milwaukee, being .10, .10 and .08 respectively; and the smallest rate being in New Orleans, Washington, Cleveland, Baltimore and St. Louis, being .03, .04, .04, .04 and .04 respectively. These figures are approximately correct.

Etiology.—That the Klebs-Löffler bacillus and its products cause all the pathologic phenomena connected with diphtheria there seems to be no reasonable doubt at the present time, but the origin of this bacillus and its habits are matters far from being settled, and these questions bear a very important relation to the etiology of this disease. Whether the bacillus originates *de-novo*, or whether it is a product of evolution from other forms of life, whether it can live in the soil in its true state, or is capable of taking on a form of existence non-pathogenic or saprophytic for an indefinite period of time, and then under certain favorable circumstances is capable of developing into pathogenic qualities, are questions yet to be solved. Quite an extensive experience with this disease, both as a practicing physician and as a health officer in a city which at times has led all other cities in this country in the large number of cases of diphtheria, leads me to observe that it is favored by cold, damp, cloudy weather; that it is more active in winter than in summer; that it is favored by damp dark cellars and poorly drained soil; that in certain conditions of soil and weather it seems to remain dormant for an indefinite period of time, and under more favorable conditions such as cold, cloudy, damp but not too wet weather, it becomes active; that sunlight, good air, good drainage and plenty of snow in its season, very materially lessen its ravages. There is much, however, to be learned concerning the true nature and habits of this bacillus, and this is a difficult matter to study, for nature's laboratory, in which these bacilli operate, is far different from any constructed by man.

That defective plumbing may be an indirect cause there seems to be no reason to doubt, but I have found no evidence that the bacillus is carried in the escaping sewer air; it is more probable that the effect of inhaling the sewer air debilitates the system and renders the powers of resistance less, thereby favoring the infection of diphtheria, as well as any and all other infectious diseases.

Periodicity.—Hirsch has called attention to the possible cyclical character of the epidemicity of this disease, though the cycles have extended over periods of various lengths, many of them only a few years, others lasting several decades. In the city where I reside, the two periods of greatest prevalence of the disease that have existed since records have been kept were about ten years apart, these periods lasting about two years each; at other times, although the disease has been constantly present the number of cases has been comparatively low.

Modes of Dissemination.—The means of disseminating this disease are many; from person to person by means of infected clothing of all kinds, furniture, rooms, books, papers, foods, drinks (especially milk), milk tickets, money, domestic animals, such as dogs, cats, birds, etc., and at school from everything with which the child may come in contact, as almost everything conceivable may, under certain circumstances, become infected. There is no evidence that the disease can be disseminated by the air for more than a very few feet; it is usually necessary to come in actual contact with the bacillus at its lodging place in order to become infected, and unless it is propelled for some little distance by the patient in coughing, it is rarely taken through the medium of the atmospere.

Stage of Incubation.—The stage of incubation is usually short, not longer than two or three days; it may vary, however, being modified by the virulence or activity of the bacilli and the powers of resistance offered by the patient.

Prevention and Control of Epidemics.—In ordinary communities the health officer must first have great legal powers and they must be executed if he is going to contend with this disease; he must also have the hearty coöperation of all physicians in the vicinity. Without these two requisites he is absolutely powerless. The education of the people in the importance of sanitary matters is an admirable requisition but it will not be sufficient alone, in our day and time, to cope with epidemics of disease of any kind. The importance of law and the coöperation of physicians can not be too highly appreciated by members of our own profession. Our medical schools need to impress this more emphatically on the minds of medical students.

Cases must be isolated early and long, and to do this in most families where the disease prevails, the cases must be reported to the health officers early. Every city and town should provide means for a bacteriologic examination in any and all cases where there can be a question of doubt about the diagnosis, and this is often the case.

Every city and town should also be provided with an isolation hospital, or an isolation ward in a hospital to which every case can be removed, if possible, and isolated from all other cases and placed under the charge of nurses trained in the care of infectious diseases. By these means a better chance of recovery is gained by the patient and the danger of spreading the disease is reduced to a minimum. These facts should be taught the people by the physicians in such earnestness that they can not fail to learn the lesson. These hospitals should not be pest-houses nor disgraced by that name. Under modern scientific medical knowledge we have no longer any use for a pest-house and one should not be tolerated in any civilized community. With the antiseptic and aseptic care of all patients with diphtheria, as carried out by modern trained nurses under the direction of competent physicians, in properly constructed isolated hospitals, the control of the infection is absolute. A case of diphtheria early diagnosed and removed to an isolation hospital, and kept there until fully recovered, or until he dies, and the body properly disposed of, and the house and infected articles in the house early and properly disinfected, or destroyed by fire if of little or no value, will prevent a spread of diphtheria as effectually and surely as a problem can be solved in mathematics; but the details in each case must be correctly observed to arrive at a successful result. Where a large number of cases exist in a community the same principles hold good, but it becomes a more complicated problem.

Isolation and disinfection are the key-notes of the prevention and spread of diphtheria, but the details of these two important measures must be as fully understood, and their importance as fully realized, in order to be successful, as the principles of asepsis in surgery.

Having isolated the patient and thoroughly disinfected all apartments and articles infected, and having cared for the case in the most approved manner known to modern trained nursing, there is one matter often lost sight of, that is, keeping the patient isolated long enough. It is well known that the bacilli of this disease may exist in the posterior naris and pharynx for a long time after all traces of exudation have disappeared, and it is decidedly unsafe to discharge patients from isolation until the mucous membrane is entirely healthy and has been thoroughly disinfected for several days after all appearance of a diseased condition has subsided.

No case, however light, should be discharged from isolation for at least four weeks from the time of the commencement of the disease, and no child should be allowed to attend school or mingle with other children until the expiration of six weeks from the commencement of the last case in a house, in case of recovery, and in many instances a much longer period of time should be observed. In case of death, the body should be wrapped in a sheet wet in a proper disinfectant and immediately hermetically sealed, and should be prohibited from transportation, but should be buried or cremated within twelve hours after death, after which all apartments and articles infected should be thoroughly disinfected, and those of the family exposed should not be relieved from quarantine for at least seven days after the disposal of the body and disinfection. This rule should also apply to all persons exposed to a case of diphtheria before thorough isolation and disinfection, whether isolated at home or removed to a hospital.

By such measures only can we expect to control the ravages of this disease, and it will require a realizing sense of the importance of such measures on the part of the health officer, as well as courage and efficient police powers and police force, at times, to carry out such provisions successfully.

REMARKS ON ONE HUNDRED ABDOMINAL SECTIONS.

BY BYRON ROBINSON.
CHICAGO.

The typical "control" laparotomy is prepared for three days by administering salts and calomel, until a dozen bowel movements are produced or until the bile glistens in the stool. The patients should then rest in bed and be given no purgatives. This will allow the fermenting gas to escape and when the abdomen is opened on the fifth day the intestines will be collapsed like ribbons. Such a course of preparatory treatment is wise as it stimulates all the alimentary glands to the highest stage of depletion. The pores of the skin are opened and stimulated to secretion by daily baths. At the time of the operation all the secretive tissue is at its highest tension and the depleting avenues are all washed out and open. Pure ether was used as an anesthetic in about 90 per cent. of cases and though it may be followed by bronchitis and nephritis, yet it is in my opinion safer than chloroform, which kills outright by acting on the heart or respiratory centers. No cases were selected or refused. The operations were the following:

1. Removal of the tubes and ovaries.
2. Abdominal hysterectomy.
3. Vaginal hysterectomy.
4. Appendicitis.
5. Hernia.
6. Colotomy.
7. Post-peritoneal abscess.
8. Ectopic pregnancy.
9. Tubercular peritonitis.

There were six deaths in the one hundred cases. One died fifty-two hours after the removal of the sixty pound tumor, from shock and sepsis. One died on the fifth day from pulmonary embolus. One died

from shock by removing a large ovarian carcinoma, ten hours after the operation. One died from urinary suppression beginning on the fourth day after the operation. One died an hour after operation from hemorrhage previous to operation. She had ruptured tubal pregnancy and about four quarts of blood were turned out of the abdominal cavity. The sixth died after the use of the Murphy button. The autopsy revealed one large and two small perforations at the side of the button.

The standard for the operation is the urea. The patient on entering the hospital is ordered to have the urine examined three times, eight hours apart. The urea runs from four to eleven grains to the ounce. I think it is unsafe to operate with less than 5 grains of urea to the ounce. Tests of urine were made for albumen and sugar, but less importance was attached to them. I generally prepare the hands by careful washing for an hour before the operation—say thirty minutes the night before and thirty minutes just before the operation. I wash them in turpentine and alcohol. I note the hand preparation, for I work in *post-mortems* and abdominal operative courses on the cadaver every month in the year. I often scrub my hands an hour previous to the operation and I do not know that I have ever infected a patient. Several years ago I was a pupil of Prof. Karl Braun's first assistant, who worked continually on the cadaver and in abdominal sections and obstetrics, and I never knew him to infect a patient. He scrubbed his hands, however, less than I do. I do not use bichlorid on my hands (unless I have been to a virulent pus case) because it desquamates the epithelium, and makes them so rough that I can not scrub them clean. Hot water, soap, turpentine and alcohol have proved sufficient. I have discarded sea sponges for safety and use now only pieces of gauze. During the last part of the series I make the incision slightly to one side of the linea alba, and I think the union is better and stronger. I now close the abdominal incision with silkworm gut. The suture passes through the whole abdominal wall about four stitches to the inch. I leave the sutures in for three or four weeks. Wounds do not heal very well inside of three weeks. We used the drain tube in all pus cases and in most with extensive adhesions. In short, we used the drain tubes when we were in doubt. We use the tube from a few hours to several days. We are gradually limiting the use of the drain tube. We are also gradually limiting the use of irrigating the peritoneal cavity. The sutures we use in the abdominal cavity are silk and kangaroo tendon and linen thread (Barbour's No. 40).

In the after treatment of laparotomy, half the battle is with the intestines. Gas begins to pass in ordinary cases some fifteen hours after the operation, but we generally begin to give Mg. So_4 3i and $Hg_2 Cl_2$ grs. ii, alternating every two hours in the early part of the third day until the bowels move. The patient is given a rectal enema on the second day. If gas does not pass on the second or third day, tympanitis arises, which is a kind of incipient peritonitis. It is intestinal paralysis which if allowed to progress ends in peritonitis. But a bowel movement subsides the tympanitis and hence a purgative is a prophylaxis in peritonitis. From our present knowledge we must look on post-operative tympanitis as incipient peritonitis. We give hot fluid drinks from one-half to two ounces an hour as soon as the patient desires them. If the patient vomits the drinks are discontinued. No ice or cold fluids are allowed as they encourage thirst. Peritoneal sections give rise to a raging thirst and hot water slakes it better than any kind of drink. Besides water is a natural diuretic; it quiets the patient's stomach and nerves and fills the vessels with fluid. For pain we occasionally give one-sixteenth of a grain of morphin from two to four times in the first thirty-six hours. Several years ago while a pupil of Mr. Tait, the first time I saw him do a laparotomy he ordered his assistant to give the patient a hypodermic of morphin immediately after the operation and this practice he frequently repeated. Opium has its place in laparotomy. Rest and ease are superior to pain which can be judicially controlled by morphin injected under the skin. But in all the after-treatment the judicious use of salts (Mg. So_4) is the most effective. When tympanitis (incipient peritonitis) arises, it then becomes a race between bowel movements and death. If the salts irritate intestinal peristalsis they win the subject.

The post-operative sequelæ are of significant importance. There were two hernias; one occurred in the abdominal wound of a woman on whom I had performed a vaginal hysterectomy (for cancer) and some ten months after abdominal section for a parovarian tumor. The hernia became apparent some eight months after the last operation. It was about the size of an apple. I think the cancerous cachexia explains the deficient union of the abdominal wound. This woman died twenty-two months after the vaginal hysterectomy, from a return of the malignant growth.

The second hernia appeared in a woman of about 60, on whom I assisted Dr. Lucy Waite to perform abdominal hysterectomy for a large fibroid. The operation was started as a vaginal hysterectomy, and as it was found impossible to get the uterus through the vagina it was finished per abdominal section. She made a beautiful recovery and remained in the hospital a month. All wounds appeared satisfactorily healed when she left. Some ten months after she left the hospital I heard that she was in a hospital suffering with abdominal and vaginal hernia. Some dozen fistulæ appeared in the abdominal wounds. Nearly all healed in a few weeks or months. One fistula appeared a year after the operation and is still existing. One fistula lasted a year, and I then pulled out a ligature. So far as I know, 2 abdominal fistulæ still exist out of the 100 cases. At the bottom of the two fistulæ I think, there lies a ligature infected with gonorrhea. As regards stitch abscesses perhaps ten occurred. Nearly all were in cases of severe pyosalpinx, where pus flowed over the wounds and the temperature was high. But four of them, I think, occurred directly from the use of impure boracic acid. In a series of twenty cases, I covered the whole wound with boracic acid. It dries the wound and induces healing. To our surprise four of these cases had stitch abscesses where we knew of no wound infection. Boracic acid is a common commercial article and may be put up by ordinary laborers. The varying price will indicate this. We now use simply boiled gauze on the wound and remove the sutures three weeks after the operation. In one case the tubes were tied and left *in situ*. In this case uterine hemorrhage came on a year after. In another case, after the removal of an enormous pyosalpinx and the other appendages, quite severe monthly hemorrhages have occurred for thirteen months but in the fourteenth

month I again operated, removing a parovarian cyst which induced the hemorrhage. For over a year we have followed the method of not only removing the appendages, but in twenty-six cases have tied the uterine artery which courses along the side of the uterus down as far as the cervix. Three ligatures are applied to the artery from the fundus to the junction of the neck and body. It has proved safe to tie off that much of blood supply. This operation I introduced two years ago, and it has proved a very efficient one; *a*, in immediately stopping menstruation; *b*, in reducing the myomatous growths of the uterus; *c*, in checking uterine hemorrhages; and *d*, it raises the uterus high up in the pelvis by shortening the broad ligaments.

In one case operated upon by Dr. Lucy Waite, a recto-vaginal fistula lasted about a week. In one of my own cases a recto-vaginal fistula remained in a cancerous rectum. In another case not belonging to us, cancer followed in the abdominal wound. In both these last cases, Dr. Joseph B. Bacon and myself performed inguinal colotomy with much relief to the patient. Three cases were tubercular peritonitis and were wonderfully improved by exploration and drainage. Two cases proved to be large cancers of the pylorus and cardiac end. They were simply exploratory.

As regards the removal of the appendages the operation was generally performed on account of the following connected pathologic condition viz: Endometritis plus metritis, plus endosalpingitis, plus ovaritis, plus as much peritonitis as was involved by the infection. Such a condition is founded on a progressive infectious invasion from vulva to peritoneum. My opinion is that these persistent diseases are chiefly of gonorrheal origin. In these cases the infection spreads over the endometrium, next along the rich and luxuriant folds of the endosalpinx to the ovary where the infection finds a home in the germinal epithelium of the ovary and the glandular epithelium of the membrana granulosa. Finally, the invasive infection irritates into peritonitis a limited field where exudates, adhesions and bands permanently remain. The class of women suffering from the above progressive, infectious catarrhal diseases have leucorrhea, large metritic uteri, which if not fixed by adhesions lie at the mouth of the vagina from relaxed and edematous supports. The tubes are crooked, convoluted and spiral, fixed here and there by adhesions. The tubes may be cystic or thickened by old chronic inflammation. The ovary is generally saturated through and through with infection.

The Graaffian follicles are pathogenic, degenerate, distended. The exudates, adhesions and bands which almost all start from the mouth of the Fallopian tube show different ages by their different stages of formation. Such women are nearly always helplessly sterile; they have painful menstruation, indigestion, anemia and neurosis. Neuralgia and headaches frequently arise. Distant disturbances from reflex irritation are constant. These patients are far better off with the appendages removed. If the Fallopian tubes are closed by allowing a few fimbriæ to remain outside, as the peritoneum closed up at the outer end the patient had continual exacerbation or recurrent pelvic peritonitis. If the fimbriæ of the tubes were entirely turned back into the tubal lumen before the tubal end was sealed, the woman would not suffer from recurrent attacks. In such cases the whole of the fimbriæ lay neatly folded up like the petals of a rose. The terrible persistence of the disease indicates to me a gonorrheal origin.

In the cases of removal of the appendages we had a hematocele in about 8 per cent. of cases. It generally arose as follows: We pay no attention to menstruation as far as regards operation. When the operation was performed at the menstruation, the hematocele might appear inside of a week. But if the operation was performed midway between menstrual times the hematocele would likely appear with the next menstrual period. The hematocele was apt to appear when the ligature was thrown around a broad ligament with a large and congested plexus pampiniforms. It occurred the most frequently in the younger women. Two typical cases arose, in a girl of 15 and one of 19 years of age. The hematocele often produced intense pain for two to five days from pressure. To these patients we gave hypodermics of 1-16 grain of morphin several times in twenty-four hours. When it began to absorb it disappeared quickly. I have sometimes wondered whether such swellings might not be exudates from infection in the ligature, or introduced, but I am inclined now to favor the idea of blood extravasation from the plexus pampiniforms. Mr. Tait had some 12 per cent. of hematocele cases while I was his pupil. Vaginal hysterectomy was only performed once for malignancy. The malignant growth had invaded the broad ligament and was perceptible to the touch. Much warm discussion took place as to whether the growth in this uterus was cancer or sarcoma. However, after more extended microscopic labors on it, Dr. Angear pronounced it cancer. The patient lived comfortably for about eighteen months and died twenty-two months after the operation.

Abdominal hysterectomy was done three times by myself, with the Kleeburg elastic ligature, and Dr. Waite once extirpated the entire uterus for myoma. Of all the methods of abdominal hysterectomy, I think that of applying an elastic ligature around the stumps in the lower angle of the wound is the safest for the immediate safety of life. Byford's method of turning the stump into the vagina acts well but requires longer time. Total or partial extirpation of the uterus will no doubt be the future method. The cases must be judged individually and the life of the patient must be the foremost thought of the operator.

In appendicitis, the majority of cases were done on suppurating cases, and we made an incision far out to the lateral side of the right iliac fossa, just to the inner edge of the iliac crest, and allowed the pus to escape without attempting to break up the adhesions and search for the appendix. We drain with a bent rubber tube. No recurrent attack arose in such cases in two years. In other cases of relapsing appendicitis we make the same incision but extirpated the appendix. In pus cases of appendicitis, I am in favor of the incision close to the iliac crest, of not searching for the appendix, of little irrigation and rubber tube drainage and attempting to keep out of the general peritoneal cavity. The operation in circumscribed pus cases will simply be opening an abscess.

In recurrent cases of appendicitis I am in favor of removing the appendix, deliberately putting the patient to bed, preparing him and then taking out the vestigeal remnant. Appendicitis is a grave disease of modern recognition, demanding skill in abdominal surgery to manage it successfully. Amateur

surgery in appendicitis is dangerous. Infection among the small intestines is almost always fatal as the infection travels so rapidly that peritonitis—the process which attempts to save life—can not arise.

In women, so far as my work in autopsies are concerned, the appendix lies over the brim of the pelvic in over 25 per cent. of cases. Hence appendicitis is relatively safer in woman than in man, for the pelvis tolerates much peritonitis or rather infection. Also there is no doubt that much interchange of infectious disease occurs between the appendix and appendages.

The cases of hernia have been inguinal and femoral. The inguinal hernia operation in man was performed by free incisions from the external to internal ring, whence the incision was carried an inch higher up or farther out from the intestinal ring toward the iliac spine. The cord was well lifted up and out, while the posterior part of the inguinal canal was carefully restored with Marcy's kangaroo tendon. Layer by layer, the parts of the abdominal wall were carefully sutured by the buried tendon. The cord was finally buried by suturing the skin superficial and deep fascia over it. When finished, the spermatic cord entered a new canal as near the anterior superior spine as its length would permit. It then passed through the abdominal wall under the deep fascia whence it deflected toward the pubic spine, lying between the deep abdominal fascia and the aponeurosis of the external oblique.

The principle underlying the operation is: *a*, the restoring the obliquity of the inguinal canal (Marcy); *b*, the formation of a new canal for the cord (Bassini and Halstead). The abdominal wall posterior to the cord was united by kangaroo tendon of Marcy. It was permanently buried. But the skin and fascia anterior to the cord was united by silkworm gut.

The plan of the femoral hernia we adopted to some extent from Fabricius. The incision was begun at the pubic spine and extended outward perpendicularly to the long axis of the body. The incision extended from the pubic spine to the outer edge of the sartorius muscle. The first landmark to gain was Gimbernaut's ligament. This was slightly cut to allow reduction and proper manipulation of the sac. The vein, artery and nerve are then forcibly pushed and drawn toward the iliac spine, and now the lower edge of Poupart's ligament is depressed and sutured to the fascia on the front surface of the pectineus muscle and to the periosteum. After the pectineal fascia is incised it is turned toward Poupart's ligament. The suturing of the lower edge of Poupart's ligament to the turned up edge of the pectineal fascia is then carried on from the pubic spine as far outward as one feels it is safe to push the vein and artery. Slowly we are pushing the vein and artery farther out toward the spine and following it with the deep suturing. This really makes a new canal and closes and fortifies the old one. We use Marcy's kangaroo tendon. The skin is closed by silkworm gut. How far we can safely push the vein and artery toward the iliac spine is the chief question in this operation. We were afraid of edema of the lower limb from compression of the femoral vein, but Fabricius says we need not be alarmed by that consequence. However, we find that we can push the vein and artery farther toward the iliac spine than was thought at first.

The second ectopic pregnancy case had a temperature of 106.5. Her pulse was about 160. She had a severe chill and I diagnosed rupture in the pelvis. In this case she had had a tubal pregnancy which ruptured and remained in *statu quo*. A few months subsequent to the tubal rupture she became pregnant in the uterus and an abortion occurred. This fresh uterine abortion exacerbated the old tubal trouble which ruptured. She recovered slowly and to-day, fifteen months after, she has a fistula.

The third one of ectopic pregnancy was a young woman. At the operation she had a temperature of 103 and a pulse of 150. She recovered well.

The fourth case was a woman about 37, who had been in bed eleven weeks after rupture. Her pelvis was full of consecutive layers of blood clots due to recurrent attacks. She recovered slowly but well.

The colotomy performed on two of the patients by Dr. Joseph B. Bacon and myself was done on the left side. The sigmoid flexure was drawn out and well pulled down, so as to avoid subsequent prolapse. Two threads of silkworm or silver wire were passed from one edge of the wound to the other, under the gut, and through the mesentery. It was well lightened. Then the peritoneum was carefully sutured to the gut wall so as to entirely shut off the general peritoneal cavity. The gut was opened from three to five days after the operation. Wonderful relief from pain occurred to the patients who had colotomy done for malignant rectal trouble. Besides it checked the growth of the disease to turn the fecal channel in another direction.

The case of post-peritoneal abscess was operated on by Dr. Waite, and drained through the abdominal wound. A history of five years previously having had an abscess on the backbone probably explained the post-peritoneal abscess as being metastatic.

In this series of 100 cases, Dr. Lucy Waite performed 18 of the operations, but as I assisted her in every case I include them in the report.

During the time that the above series of sections were being performed, I supervised quite a number of amateur surgeons in performing various kinds of abdominal sections not included here. I was impressed with two points by the amateur operator. The first was a lack of knowledge as to the landmarks of visceral disease. They seemed not to have been taught where it is possible that tumors and inflammation are liable to arise. The second impression was that the surgeon lacked systematic methods of examining the viscera after the abdomen had been opened. The surgeon would introduce the hand and pass it around the abdominal cavity without definite views of anatomy and pathology.

As far as regards the chief pathologic landmarks of visceral disease and the systematic anatomic manipulation of the same, there is no wonder that amateur and general surgeons show lack of knowledge in abdominal pathology, and sad need of abdominal anatomy, when no college can be pointed to as possessing a chair of one or both. In every college there should be a chair of abdominal or visceral pathology and a chair of visceral anatomy; besides every student who intends to do abdominal surgery should be put through a prescribed course of experiments on the viscera of animals. During several years of teaching of the anatomy and pathology of the abdomen, I evolved the following table which suggests landmarks of anatomy and pathology in the abdomen:

Landmarks in Gynecology:
- *a*. Anatomy.
- *b*. Menstruation. — age. regularity. quantity. pain.
- *c*. Labor.
- *d*. Abortion.
- *e*. Gonorrhea.
- *f*. Tumors.

Landmarks in the Digestive Tract. Sphincters.
- *a*. Mouth.
- *b*. Cardiac orifice.
- *c*. Pylorus.
- *d*. Ileo-cecal valve.
- *e*. Anus.

Landmarks in the Digestive Tract. Flexures.
- *a*. Hepatic.
- *b*. Splenic.
- *c*. Sigmoid.

Landmarks in Peritonitis.
- *a*. Mouths of Fallopian tubes.
- *b*. Hernial orifices.
- *c*. Appendix.
- *d*. Gall-bladder.
- *e*. Sigmoid flexure.
- *f*. Splenic flexure.
- *g*. Hepatic flexure.
- *h*. Accidental.

Landmarks in Surgical Localization.
- *a*. Uterus.
- *b*. Cecum.
- *c*. Colon. — sacruli coli. tenia coli.
- *d*. Sigmoid flexure.
- *e*. Pylorus.

A few valuable generalizations aid in analyzing when making a differential diagnosis. It may be noticed that the sphincters are liable to disease on account of: *a*, periodical action function; *b*, delicate nerve apparatus; *c*, complicated and varied blood supply; *d*, extensive lymphatic system; that malignancy is their chief disease and anatomy shows definite localized fixation of sphincters. It may be observed that the flexures are quite fixed and that they are liable, first, to non-malignant; and second, to malignant disease. In regard to peritonitis, there are three notorious regions, viz., pelvic, appendicular and that of the gall-bladder. In these three regions the peritoneum tolerates much infection and inflammation. These regions for ages have learned to cope with inflammation. Remember, that peritonitis tends to save life by throwing out barriers of exudate, preventing infectious invasion while it is infection which tends to kill. Note, also, that outside of the great peritonitic regions (pelvic, appendicular and gall bladder) that infection or so-called peritonitis is very fatal, *e. g.*, among the small intestines.

As to surgical localization it simply involves the anatomy. On opening the abdomen the first organ to locate is the uterus; 2, especially important in localizing landmarks is the cecum; 3, the colon is of some significance, while the sigmoid (fourth) and the pylorus, (fifth) is of less importance. None but the intestinal surgeon realizes the all-important localization of the cecum, which gives an easy clue to the rest of the digestive tract. Amateur and general surgeons should realize the difficulty in diagnosing abdominal tumors, especially on the right side. If one opens a cadaver, a silver dollar may be so placed as to touch: *a*, the pylorus; *b*, the gall bladder; *c*, the supra-renal capsule; *d*, the kidney; *e*, the head of the pancreas; and *f*, the hepatic colonic flexure. Thus six organs, within touch of a silver dollar, might give origin to a tumor in the right portion of the abdomen. On the left side, the cardiac end of the stomach, tail of the pancreas, spleen and splenic flexure of the colon presents similar close complications. In visceral disease it is well to remember that probability is the rule of life. On account of the scarcity of material and the rarity of practical teaching in visceral anatomy, besides the limited knowledge gained by observing, always, at an abdominal section, by those not having the privilege of manipulating and seeing the viscera, amateur abdominal surgery is, frequently unfortunate, unsatisfactory in results and too often disastrous. It is the opinion of the writer, from ten years of special observation in abdominal work, that young physicians should be impressed with the fact that more personal study, experiment and especial training should be experienced before practice is applied to human subjects.

LESSONS LEARNED FROM ONE HUNDRED ABDOMINAL SECTIONS.

1. That chloroform kills outright by affecting the heart or respiratory center.

2. That ether may be followed by bronchitis and nephritis (immediate or remote).

3. That opening the peritoneum produces a raging thirst which can be slaked by one-half to two ounces of hot fluid an hour. Ice is dangerous and cold water should not be used after abdominal section.

4. That saline purgatives are prophylactic against incipient peritonitis. General peritonitis once established is practically an incurable disease.

5. That it is infection that tends to destroy life, while peritonitis tends to save life by throwing out exudates to prevent the invasion of infection. Local peritonitis is nature's method of repair.

6. That the three great regions of peritonitis are: *a*, the pelvic; *b*, appendicular; *c*, the region of the gall bladder. They resist the invasion of infection and tolerate it markedly.

7. That infection among the small intestines is very fatal, from inability to produce peritonitic exudates to circumscribe the infection.

8. That gonorrhea is the cause and sustaining factor of the majority of persistent tubo-ovarian diseases or pelvic peritonitis.

9. That gonorrheal appendages are apt to infect ligatures which may suppurate and produce a fistula from one month to one year after the operation.

10. That post-operative hernia of the abdominal wound is liable to occur in malignant or aged cases. That advanced, malignant visceral disease should not be molested.

11. That irrigation and drainage of the peritoneal cavity should be limited—irrigation quite limited and drainage to hemorrhage and pus cases.

12. That the Trendelenberg position enables one to do more perfect work by seeing with the eyes and giving wider space for manipulation.

13. That suppurating appendicitis can be radically cured (for two years at least) by an incision close to the right iliac fossa, allowing the pus to escape and not searching for the appendix. The incision can profitably be made close to the iliac spine.

14. That in woman the appendix is in the pelvis in one-third of the cases and tubo-ovarian and appendicular disease may each be derived from the other.

15. That inguinal hernia can be radically cured by restoring the obliquity of the inguinal canal, and removing the spermatic cord into a new canal. (Marcy, Bassini and Halstead).

16. That femoral hernia can be radically cured by

displacing the femoral vein and artery toward the iliac spine, and suturing the lower border of the Poupart's ligament to the pectineal fascia—making a new canal for the vein and artery. (Fabricius.)

17. That tying off the appendages and then ligating the uterine artery as it courses along the uterus as far down as the cervix: *a*, quickly stops menstruation; *b*, checks hemorrhage in the uterine myoma; *c*, it atrophies uterine tumors by cutting off the blood stream; *d*, by ligating the whole broad ligament low down with locked stitches the retroverted uterus can be well elevated; and *e*, by ligating the nourishing nerves, atrophy of the genitals will ensue.

18. That the fimbriated end of the Fallopian tube closes in two ways during the course of disease: *a*, in one case (disastrous); the tubal fimbriæ are only partially turned back into the tubal lumen, leaving infected fimbriæ both in the tubal lumen and in the peritoneal cavity—such cases are constantly liable to recurrent infection and exacerbation because the mucal fimbriæ serve as a home for the germs; *b*, the other (favorable) method is where all the fimbriæ of the tube are turned back into the tubal lumen, where they lie coiled up like the petals of a rose.

19. The very severe forms of menstrual neurosis can be cured (for two years) by removing the uterine appendages close to the uterus. Bleeding myoma is also in some cases cured by the same process.

20. But in re-operating on abdominal cases (one ten months, the other fourteen, after) for parovarian cysts, the viscera are found surrounded by various degrees of adhesions. The fourteen months' case possessed dense and extensive adhesions. I proved the same fact on scores of dogs' viscera several years ago.

21. That parovarian cysts are the most liable to recur in 100 cases of abdominal section.

22. That abdominal fistula is apt to arise immediately after the operation and continue for some weeks to eighteen months. Also that some fistulæ arise from two to six months after the operation and continue for eighteen months.

23. That urea is the best standard for safe laparotomy, as far as regards the kidney. When the woman came to the hospital the urea varied from five grains to twelve grains to the ounce, but in a few days it would become about eight grains to the ounce. Not so much notice is paid to albumen or sugar.

24. That in ruptured ectopic pregnancy there is surgical hope, though the temperature is nearly 107 and the pulse 160.

25. Every case of abdominal section should be in bed at least three weeks.

SOCIETY NEWS.

Southern Illinois Medical Association.—The twentieth semi-annual meeting of the Southern Illinois Medical Association was held November 15 and 16 in Duquoin, and was called to order at 10:30 A.M., by President Dr. McKenzie. There were about 25 members present out of a total membership of 100. The address of welcome was delivered by Dr. L. Dyer, and Prof. C. W. Harris, responded to by Dr. Mitchell, of Carbondale. There were ten papers read: "Criminal Responsibility as Related to Insanity." "Duties of Physicians." "Bacteriology." "Fracture of Femur Treated by Hodgen's Splint." "Whisky in Medicine." "Effects of Alcohol on the Human System." "Phlegmasia Dolens." "Fever, Causes and Treatment." "Diseases of Children—also Case of Wound of Abdomen." "Necrologist's Report." "Cases of Nephritis with Extensive Edema and Necrosis of Lower Jaw." Dr. G. N. Kreider, Treasurer of the Illinois State Medical Society and Dr. Mudd, of St. Louis, were present by invitation. Dr. Corr, first Vice-President of the Illinois State Medical Society, was present as fraternal delegate. All these gentlemen were accorded the courtesies of the Association. Dr. Corr presented the fraternal greetings of Dr. D. R. Brower, President of the Illinois State Medical Association, who urged a more hearty support of the State Society. Drs. Kreider and Corr were accorded the privilege of presenting the claims of the Illinois State Medical Society in that it needed increased numbers and annual dues to support the Legislative Committee in its charitable and scientific work. The Association adjourned at 3:30 P.M. on the 16th inst., to meet in Carbondale, May 15 and 16, 1895.

Chicago Ophthalmological and Otological Society.—Regular meeting, postponed one week, was held at the Saratoga Hotel, Oct. 16, 1894. DR. HOTZ in the chair. There were eighteen members and visitors in attendance. Minutes of last meeting were read and approved.

The application of Dr. T. Faith was received and referred to the Committee on Membership.

DR. HOTZ reported that Dr. Meyer would read three papers before the Society if agreeable:

1. "Recent Views on Histology of Nervous System."
2. "Minute Anatomy of Optic Nerve Tracts."
3. "Review of Researches of Hinschen and Others."

On DR. MONTGOMERY'S motion, the President was requested to invite Dr. Meyer to deliver these three essays and the Secretary was instructed to present Dr. Meyer with $50 as an honorarium.

On DR. BETTMAN'S motion, the Secretary was instructed to levy an assessment of $2 on each member.

DR. HOTZ reported a case of skin grafting for pterygium. The patient, 30 years old, had four operations performed before consulting Dr. Hotz but without much improvement. The pterygium extended to center of cornea and was very thick. In November, 1893, Dr. Hotz did the ordinary operation, but the pterygium returned in a few months. Sept. 5, 1894, dissected back the conjunctiva as far as the caruncle, a space ten mm. long and six mm. wide. Over this surface a piece of skin, taken from behind the ear, 4x4 mm. was grafted. A larger piece could not be used because in adduction the graft was pushed over the cornea. It healed nicely but even this small piece has been pushed slightly over the cornea.

DR. BETTMAN showed a case of skin grafting for symblepharon. The eye was destroyed by lime and very extensive adhesions took place. After enucleation, pieces of skin were implanted and the patient can now wear an artificial eye comfortably.

DR. WILLIAMS had found that although the gain seemed great from grafts for a few months, yet the grafts were very apt to shrink to almost nothing in time.

DR. MONTGOMERY also spoke of having had such experiences and quoted cases in illustration.

DR. BEARD thought that most cases required repeated operation before the final result was obtained. He had operated on one case four times already and expected to do more.

DR. COLEMAN transplanted skin in one eye and mucous membrane in the other. Both did well but the skin gave the better result.

DR. BETTMAN said that it was important to remove all cicatricial tissue from the wound before the skin is grafted, and thought poor results were often due to neglect of this precaution.

DR. BEARD prefers mucous membrane to skin in plastic

operations on the conjunctiva because he had a case in which the skin graft caused an ulcer. He removed the skin, put in mucous membrane and the ulcer got well.

DR. HOTZ prefers skin grafts on lid border and never had any trouble with them. Takes skin from behind ear in narrow wedge-shaped strips.

DR. WILDER spoke of a case which had been operated on sixteen times for entropion but always relapsed. Dr. W. thought it was because the grafts were not rigid enough and he transplanted a graft from the hypothenar eminence with good results. He showed some beautiful preparations hardened in formaldehyde. He used a 5 per cent. solution and the eyes were hard in two days. Specimens retain their transparency and colors with this preparation.

DR. MONTGOMERY read a paper on increase of astigmatism and reported cases.

DR. COLEMAN said that Gould asserts that correcting full error will favor the increase of hyperopia.

DR. JONES said that a relaxed hypertrophied ciliary muscle would cause apparent increase.

Society adjourned by limitation.

C. P. PINCKARD, Secretary.

The Board of Medical Examiners, representing the Medical Society of the State of Pennsylvania, held their fall examinations in Philadelphia, October 16, 17, 18 and 19. Thirty-three applicants were examined and four failed to receive the average of .75. H. G. McCormick, of Williamsport, is President of the Society, and W. S. Foster, of Pittsburg, Secretary.

The following questions were asked:

CHEMISTRY.

1. What is a salt? 2. What is an atom, a molecule and an element? 3. Describe nitrogen, naming its oxygen compounds and its relations to atmospheric air. 4. Describe the properties of ozone and its influence on respiration. 5. How do you determine the quantity of urea in a given specimen of urine? 6. Describe an alkaloid, naming two examples. 7. What are the physical properties of bromid, iodin and chlorin? 8. Differentiate between an acid and an alkali. 9. What is the atomic theory? 10. What is the difference between mechanical mixture and chemical union?

ANATOMY.

1. What forms the external malleolus? 2. Describe the ovaries. 3. How do arteries and capillaries differ? 4. Describe one of the vertebræ. 5. What vessels and nerves are contained in the popliteal space? 6. Describe the position of the palmar arterial arches. 7. What blood vessels pass to and from the liver? 8. Describe the pyloric orifice of the stomach. 9. What tissues of the abdominal wall are divided in the operation for appendicitis? 10. Give the distribution of the third cranial nerve.

PHYSIOLOGY AND PATHOLOGY.

1. What are the functions of the stomach? 2. Explain how the normal cardiac sounds are produced. 3. Describe the phenomenon of urinary secretion and excretion. 4. Give the principal functions of the cerebellum. 5. What system of nerves regulates arterial tension? Explain the qualities of the normal pulse.

1. What pathologic changes in the arteries usually precede aneurism? 2. What is the pathology, so far as known, of pernicious anemia? 3. Describe the pathologic processes of dry and moist gangrene. 4. Explain fatty metamorphosis and describe the process as it occurs in the heart. 5. Describe the difference characterizing the pathologic changes of croupous and catarrhal pneumonia.

THERAPEUTICS, MATERIA MEDICA AND PRACTICE.

1. Describe the symptoms and treatment of croupous pneumonia. 2. Give the prognosis and treatment of idiopathic erysipelas. 3. Describe the symptoms and treatment of measles. 4. Describe the treatment of ophthalmia neonatorum. 5. Give the prognosis and treatment of locomotor ataxia (tabes dorsalis). 6. Describe the physiologic action of arsenic, and name three indications for its use. 7. Describe the physiologic action of opium. 8. Describe the dietetic and hygienic treatment of typhoid fever. 9. Give the indications for the therapeutic use of quinia sulphate. 10. Name three conditions wherein and the reasons why veratrum viride is contra-indicated. 11. Name three indications for the use of belladonna. 12. Describe how belladonna acts when used, as stated in answer to question No. 11. 13. What condition of the eye contra-indicates the use of mydriatics? 14. Describe vasomotor depressants, with an example. 15. Describe and give the indications for the uses of cardiac sedatives, with an example.

OBSTETRICS.

1. What are the earliest probable signs of pregnancy, and their relative value? 2. Describe the causes, symptoms and treatment of abortion. 3. Describe the mechanism of normal labor, L. O. A. position of vertex. 4. Describe the causes, symptoms and treatment of eclampsia. 5. What are the dangers of the puerperium, and how may they be avoided? 6. Describe the process of delivering the placenta. 7. Give the diagnosis and treatment of placenta prævia. 8. Give the treatment of *post-partem* hemorrhage. Give in detail the proper care of the new-born. 10. What are the uses and dangers of ergot in obstetric practice?

SURGERY.

1. What are the principal points in the diagnosis, prophylaxis and treatment of pyemia and septicemia? 2. How would you expose the brachial artery for ligation at the middle of the arm? 3. Give a concise description of rupture of the perineum and treatment. 4. What are the indications for the use of a drainage tube? 5. Describe the predisposing and exciting causes and symptoms of carcinoma of the breast; also give treatment. 6. Describe any one of the several dislocations of the shoulder joint, and mode of reduction. 7. What are the rules for the administration of ether and chloroform as anesthetics, with contra-indications? 8. Describe the kinds of fistulæ-in-ano; give the symptoms and treatment. 9. Describe the symptoms and treatment of a Colle's fracture. 10. Describe the symptoms and treatment of the several forms of gangrene.

DIAGNOSIS AND HYGIENE.

1. Differentiate between coma and syncope. 2. Describe the physical signs of simple ascites and those of ovarian dropsy. 3. Differentiate between compression of the brain from injury and the phenomena of alcoholism. 4. Differentiate between the early eruption of syphilis and measles. 5. Differentiate between thrombosis and embolism. 6. Describe the proper methods for lighting and ventilating school rooms. 7. What are the proper methods for disposing of excrement and garbage in cities? 8. What is the difference between disinfectants and germicides, and how do they severally act in preventing the spread of contagious and infectious materials? 9. What climatic factors should govern in selecting a proper health resort for consumptives in the primary stage of the disease? 10. What is meant by quarantine, and when and how should it be enforced?

NECROLOGY.

CHARLES T. CHASE, M.D., of Brooklyn, died November 5, aged 63 years, the cause of his death having been chronic interstitial nephritis. He was a well-known practitioner of forty years standing in Brooklyn, and the son of that eminent surgeon, Dr. Charles Chase, of the United States Navy. The junior Dr. Chase had a predilection for surgery, having had experience both in the naval and volunteer army corps as a commissioned surgeon during the War of the Rebellion. About eleven years ago he lost his eyesight, and retired from practice.——Timothy M. Ingraham, M.D., of Flatbush, New York, died Nov. 11, 1894, aged 73. He was a graduate in medicine from the old "Woodstock School," or Vermont Medical College, taking his degree fifty years ago. For many years he had an almost exclusive ride in the town of Flatbush (now a ward of Brooklyn). He was a member of the Kings County Medical Society, having been an office-bearer therein. A widow and twelve children survive him. His final malady was an attack of apoplexy of short duration.——Henry W. Allen, M.D., of Milwaukee, November 9, aged 31.——Carter Higgins, M.D., of Peru, Ind., November 14.——O. B. Reed, M.D., of Lenox, Mich., November 8, aged 90.——E. B. Elrod, M.D., of Flora, Mo., November 8.——George Wilson, M.D., of Dubois, Pa., November 8, aged 80.

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On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 86 Fifth Avenue, Chicago.

SATURDAY, NOVEMBER 24, 1894.

MEDICINE IN ANCIENT ROME.

The old Romans had a great contempt for doctors. Up to the end of the Empire no proof of qualifications, neither diploma or other guaranty, was required from those practicing medicine. According to TIBERIUS every man ought to be his own physician after 30. It was the father of the family who treated his wife, his children, his slaves. CATO has left in his *De Re Rustica* the receipts which he used for half a century in the treatment of his two wives, his daughter-in-law, his daughter, his slaves, his cattle and himself. *Callage* was the basis of his therapeutics—good, both internally and externally, it cured all diseases; it was emetic and purgative, diuretic and diaphoretic. Aided by magic formulæ, such as: "*Daries, dardaries, artataries*," it caused nasal polypi to be expelled and reduced dislocations.

The Greeks introduced a less primitive therapeusis into Rome. The first Greek physician was ARCHEGATOS, who had his office in the crossroads of Acilius; and here, in which were combined a consulting room, drug store and hospital, he gave consultations, dressed wounds, prepared medicines and had some beds for cases of grave diseases or severe operations. Later on, the people resorted to the doctors' offices, as they did to the barber shops, for gossip, lounging and novelty.

The ancient Romans disliked bathing as much as —according to *La Médecine Moderne*—do the Italians of to-day; that journal, from which this gossip is gleaned, says that, "according to recent statistics the modern Italian takes a bath on the average once in two years." In the time of CATO, according to SENECA, the Romans bathed their arms and legs every day, but ablution of the whole body was indulged in only once in eight days. The craze for *thermæ*, of which ASCLEPIADES was the originator, was of later date; he was the first to treat fevers by cold baths. Under AUGUSTUS cold baths had great popularity, owing to ANTONIUS MUSA, who cured the Emperor by their use; it is true it is claimed he killed MARCELLUS—the "*Tu Marcellus eris*" of Virgil—by the same treatment.

Greek medicine held undisputed sway under the CÆSARS; only Greek terms were used and pills became *catapotia*, liniments *acopa* and *malagmata*. Each physician had some special drug which he carried about with him and which was, of course, superior to the "other fellows'," and the more mysterious the name the more potent the drug; such were *Athamasia*, the immortal; *Ambrosia*, the divine; *Panacea*, the all-curer, and *Theriaka*, which ANDROMACHE, the physician of NERO invented and described in a Greek elegiac poem. It had 600 ingredients, the basis being viper's flesh, and cured every disease; the Emperor took a pill of it every morning before breakfast. It had a prodigious success and outlasted the invasions of the barbarians and the flight of the centuries, so that even at the end of the eighteenth century, according to BOILEU, the patients in the hospital of Montpellier took a bolus of theriaka every evening, as NERO had taken his every morning eighteen hundred years before.

Fees were not neglected; under AUGUSTUS the court physician had an income of 200,000 sesterces—about $10,000. STERTININUS gave up a practice of $24,000 to become court physician; CRINUS, of Markilles, left $400,000 to his native town. The patients who contributed to these fortunes avenged themselves by epigrams. "CHARIDEMMUS," says MARTIAL, "knows very well that his wife is the mistress of his physician. But what would you have? He wishes to die a natural death, peacefully and without fever." "FABULA has quit her husband to follow a lover, whom she pays. That is not astonishing—she is the daughter of SOTA, a physician." "Yesterday ANDRAGORAS felt very well; he bathed and supped joyously with his friends. This morning they found him dead in his bed. What could have caused this sudden death? He saw HERMOCRATES, his physician, in a dream."

DIPHTHERIA AND THE ANTITOXIN.

Almost without exception the European governments have either indorsed the ROUX-BEHRING treatment of diphtheria by the antitoxin serum or have authorized its study by their medical or public health services. The latest is that of Turkey, which, by command of the Sultan, has despatched a special commission, consisting of DRS. MAHMOUD BEY, MUNIR BEY and DJELAL BEY, to the Pasteur Institute, with instructions to learn the mode of preparation of the serum and the technique of its use; on their

return they are to establish a laboratory in Constantinople for the preparation of the antitoxin.

Favorable clinical reports of its use multiply in the pages of the British and continental journals and an occasional report, also favorable, finds its way into an American periodical here and there. But a very large number, probably a majority, of the profession in this country still look askance at the claims made for the new remedy.

This somewhat remarkable conservatism is due to two obvious causes—the first, and probably the most potent,is the want of a sufficient supply of the serum to make individual tests; and the second, the haunting memory of the tuberculin failure. Municipal and individual initiative is already at work to remove the first obstacle, but the JOURNAL awaits the opportunity to announce that the National medical services have taken steps to set at rest the doubt as to the claimed value of the new treatment.

It is surely within the scope of the authority of the heads of the Army and Navy Medical Corps and of the Marine-Hospital Service to cause an investigation to be made for this purpose, and all of these services contain men abundantly qualified to conduct such an investigation and to make a report which would be accepted as authoritative and conclusive by the profession. It may be, however, that they are awaiting instructions from Congress.

THE UNRESTRICTED SALE OF POISONS.

This periodical has frequently invited public attention to the necessity of legislation placing some restrictions on the sale of poisons and articles containing poisonous substances.

The daily press contains regularly, every day, accounts of persons slain through accident or design, by some poisonous drug.

The abuse of the unrestricted privilege calls loudly for reform, and past experience has shown that the medical profession is the only one at all likely to bring the matter to public attention. When the general public becomes fully aroused on this question, public sentiment will force the law-making bodies to pass the necessary enactment.

Let our medical societies take the matter up and begin the systematic collection of facts bearing on the question. When the facts are gathered and properly formulated let the voice of the medical society be heard in no uncertain tone. A profession which has done so much for the prevention of disease and the prolongation of human life, will be listened to by Legislatures whenever it has undoubted statistics to prove its assertions. Nothing, however, is ever likely to be done so long as our request is based on assertion only. We must collect and furnish facts in order to succeed, and we may as well close this statement by that other which has been repeatedly made in these columns: *Let us have a Department of Public Health with a Cabinet officer at its head.*

THE RETURNS ARE IN.

We note with pleasure that the Fourth Indiana District has retired the HON. W. S. HOLMAN from further service in Congress from that district, and that this eminent statesman after the fourth of March next will have opportunity to practice that "economy" he has so long preached, in rural retreat. The medical services dependent on congressional appropriations will not after this session have to contend against his antagonism. *Laus Deo!*

THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

This flourishing medical organization held its annual meeting this week at Hot Springs, Ark., under the Presidency of X. C. SCOTT, M.D., of Cleveland. We expect a full report of the meeting, for the next week's issue. The attendance was larger than usual, and the St. Louis special train, as usually happens with everything managed by the editor of the St. Louis *Medical Mirror*, was successful in all particulars.

CORRESPONDENCE.

Statues to Medical Men.

PARKERSBURG, W. VA., NOV. 19, 1894.

To the Editor:—Dr. E. Cutter, in his note in the JOURNAL of November 17, trusting to his memory, falls into an error in writing of a statue to Dr. J. D. Crawford, the discoverer of ether in 1842. It was Dr. Crawford W. Long, of Madison County, Georgia, who first used ether as an anesthetic in 1842, and who neglected to make his discovery known to the world until 1849. I doubt whether there is a statue to his memory in the rotunda at Washington.

Probably the statue in the rotunda is in honor of W. Harris Crawford, one of Georgia's most distinguished citizens, who was Senator, Minister to France, Secretary of War and Treasury, and nominee for President in the congressional caucus with Jackson, Clay and Adams; at which time Adams was elected.

These statues are there by action of the National Congress, inviting the States, through their Legislatures, to place there statues of two of their distinguished citizens, and they are mostly statues of statesmen and politicians.

I have no list of those who have been thus honored, so that the above, relative to a statue to Crawford is based on recollection. If Sims' statue is the first it is to be hoped that it will not be the last, although it accords more with the spirit of our profession to erect memorials to our departed worthies in some other manner, viz.: a memorial hospital ward, or an endowed professorship, etc.

The centennial of Jenner's discovery is nearly here. In the century just passed has his memory been thus honored?

Respectfully, W. H. SHARP, M.D.

Laryngeal Epilepsy.

CHICAGO, ILL., NOV. 16, 1894.

To the Editor:—In the society proceedings of the Chicago Academy of Medicine, as published in the JOURNAL of November 10, on page 727, there appears an article by Dr. Edward T. Dickerman on "Laryngologic Relations of Epilepsy." In this article the Doctor states that "up to date, twenty-one cases have been reported," etc. I wish to state

that the Doctor may be able to add one to the list if he will look up the JOURNAL of June 3, 1893, page 604, and find "A Case of Laryngeal Epilepsy." Respectfully,

JOHN KERIHER, M.D.

BOOK NOTICES.

The Weekly Medical Review. Pocket Reference Book and Visiting List, perpetual. St. Louis: J. H. Chambers & Co. 1895. Price, $1.

This excellent visiting list is formed on the usual lines, containing tables of reference and blank spaces for call list and records.

Physician's Complete Account Book. Arranged by J. MARSHALL HAWKES, M.D., and R. HARLAN HAWKES, M.D. New York (56 Reade Street): Peckham, Little & Co. Price $3.

This is a simple and convenient account book for physicians, having blank spaces properly ruled for the keeping of accounts and explanatory memoranda connected therewith.

Local Anesthetics and Cocaine Analgesia; Their Uses and Limitations. By THOMAS H. MANLEY, A.M., M.D. Cl., pp. 177. St. Louis: J. H. Chambers & Co. 1894. Price, $1.50

The author has attempted in a fairly satisfactory way to give the indications and method of cocainization as an analgesic. He states as a distinctive difference between anesthesia and analgesia that "a local anesthetic of an intense frigorific character produces chemical changes, and temporarily destroys all sense, but an analgesic only affects the pain sense, and in no manner induces chemical changes, or endangers the vitality of the tissues." The book is timely and instructive.

A Synopsis of the Practice of Medicine for Practitioners and Students. By WM. BLAIR STEWART, A.M., M.D. 8vo., cl., pp. 433. Price, $2.75. New York: E. B. Treat (5 Cooper Union). 1894.

This book as its title indicates, summarizes in a careful and useful manner the existing practice. The treatment recommended is sound and in accordance with the latest approved teachings. In typhoid fever, for example, while the author distinctly asserts that there is no specific, he favors antiseptic medication, commending for that purpose the sulphocarbolate of zinc, salol and beta-naphthol. In dosage the old apothecaries system is followed.

Transactions of the Ophthalmological Section of the AMERICAN MEDICAL ASSOCIATION at the Forty-fifth Annual Meeting held at San Francisco, June 5-8, 1894. Cl., pp. 216. Chicago: American Medical Association Press. 1894. Price $1. Postage free.

There are one hundred and ninety-six members of the Ophthalmology Section of the AMERICAN MEDICAL ASSOCIATION, and for their convenience they directed the reprinting of this "Book of the Section." The papers have all been printed in the JOURNAL, and the volume was edited by the Section Secretary, Dr. L. H. Taylor.

A Dictionary of Medicine; including General Pathology, General Therapeutics, Hygiene, and the Diseases of Women and Children. Edited by RICHARD QUAIN, Bart., M.D., LL.D., assisted by FREDERICK THOMAS ROBERTS, M.D., and J. MITCHELL BRUCE, M.A., M.D. With an American appendix by Samuel Treat Armstrong, M.D., Ph.D. New edition, revised throughout and enlarged. Vol. I, Abdomen-Lysis; Vol. II., Maclwocheilia-Zyme. New York: D. Appleton and Company. 1894.

The well-known "Quain's Dictionary of Medicine" has now grown into two volumes, each as large as its portly predecessor, while the type remains as small as before. This is a dictionary of medicine alphabetically arranged, in which each subject is discussed according to the editor's estimate of its importance. There are so many collaborators that the great task of revision has been made lighter for the editors. The editor of the American Appendix has introduced some new medical terms, made a few cross references, added one or two articles on peculiarly American topics and has given much needed information on the American mineral springs—this last topic is one that has heretofore received much less attention than it deserved.

International Clinics; a Quarterly of Clinical Lectures on Medicine, Neurology, Surgery, Genito-urinary Surgery, Gynecology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otology and Dermatology. By Professors and Lecturers in the leading medical colleges of the United States, Germany, France, Great Britain and Canada. Edited by JUDSON DALAND, M.D., J. MITCHELL BRUCE, M.D., and DAVID W. FINLAY, M.D. Vol. III. Fourth series. Philadelphia: J. B. Lippincott Company. 1894.

The present volume of this interesting series is not less instructive than its predecessors, and the growing interest taken in these publications by the profession in general shows that they are yearly more and more appreciated. The editors and publishers have spared no pains to give the "Clinics" an attractive setting.

Medical Jurisprudence, Forensic Medicine and Toxicology. By R. A. WITTHAUS, A.M., M.D., and TRACY C. BECKER, A.B., LL.B., with the collaboration of twenty others. Volume II. Cl., pp. 751. New York: William Wood & Company. 1894.

We noticed this book *in extenso* when we received the first volume (see JOURNAL, March 10, 1894) and we are able to renew the favorable opinion then expressed, concerning the work. The present volume contains a chapter on "Examination of Blood and other Stains," and "Examination of Hair," by Edward S. Wood, M.D.; on "Abortion and Infanticide," by J. Chalmers Cameron, M.D; "Determination of Survivorship," by T. C. Becker, Esq., and J. Parmenter, Esq.; "When Medical Examination of the Living is Permitted or Required by Courts of Law," by T. C. Becker; "Pregnancy, Labor and the Puerperal State," by J. Clifton Edgar, M.D.; "Sexual Incapacity," by I. C. Rosse, M.D.; "Rape," by J. C. Edgar and J. C. Johnston; "Unnatural Crimes," by Irving C. Rosse; "Railway Injuries," by W. B. Outten, M.D., and "Simulated Diseases," by W. Thornton Parker, M.D. The work concludes with a table of cases by the legal authors and by the medical authors respectively. The index is separate for each volume.

The completion of this work enriches the library of forensic medicine in a marked degree, and it will be referred to with pleasure by all wishing information on the subject.

Practical Uranalysis and Urinary Diagnosis: A Manual for the Use of Physicians, Surgeons and Students. By CHAS. W. PURDY, M.D., Professor of Urology and Urinary Diagnosis at the Chicago Post-Graduate Medical School. With numerous illustrations, including photo-engravings and colored plates. In one crown octavo volume, 360 pages, in extra cloth, $2.50 net. Philadelphia: The F. A. Davis Co., Publishers (1914 and 1916 Cherry Street).

The author has long been known as an authority on diseases of the kidneys. He has shown much originality of research, and his results have added much to the knowledge of the subject. The present book is in two parts, whereof the first is divided into eight sections and is devoted to "Analysis of Urine;" and the second has three divisions and is devoted to "Urinary Diagnosis." There is an appendix on the "Examination of Urine for Life Insurance."

The book is concisely written and will add new laurels to the already established fame of the author. The author's habitual conservatism is well shown on page 268 where in writing of the "Diagnosis of Renal Tuberculosis" he says: "It is safer, therefore, when suspected, but not found by direct examination, to resort to cultures in gelatin in the usual manner and the inoculation of animals."

To the practitioner and as well to the clinician, this book must prove invaluable for the extent of information contained in its pages, and its practical character. There is little of the compiler but more of the author visible in the pages of the work, which we can not too highly commend.

A Practical Manual of Mental Medicine. By DR. E. RÉGIS, with a preface by M. BENJAMIN BALL. Second edition, thoroughly revised and largely re-written. Authorized translation by H. M. Bannister, A.M., M.D., with an introduction by the author. Cl., pp. 692. Utica, N. Y.: Press of American Journal of Insanity. 1894.

The first edition of this work was crowned by the Faculty of Medicine of Paris, and received the Chateauvillard Prize of 1886. In 1891 the author revised the second edition, and now it has been translated by Dr. Bannister and published by Dr. Alder Blumer, who conceived the idea of having the printing done at the Utica Asylum by his patients. "It is assuredly," says Régis, "the first work treating of mental alienation, written by an alienist, translated by an alienist, and under the direction of an alienist, printed and bound by the insane."

The translator says: "It is a rather remarkable, and perhaps not altogether a creditable fact, that up to the present we have had no English translation of any modern standard French work on mental diseases and their treatment. No apology, therefore, seems necessary for having endeavored to present to American readers the work of Dr. Régis which is, as it is considered in France, a model of its kind." The translator and the publisher have each done their work well, and the book will, we feel sure, be warmly welcomed by the American medical profession.

Chorea and Choreiform Affections. By WILLIAM OSLER, M.D. Philadelphia: P. Blakiston, Son & Co. 1894. Price $2.

This book, which is gracefully dedicated to Dr. W. R. Gowers, of London, represents "in an expanded form, the lectures on chorea which appeared in the *Medical News*, 1887," and from studies of the case books of the Infirmary for Diseases of the Nervous System in Philadelphia. Facing the title page the author has placed two quotations, one from Bouteille (1810), the translation of which is as follows: "All is extraordinary in this disease; its name is ridiculous, its symptoms singular, its character equivocal, its cause unknown, its treatment problematical."

The author says in the introduction: "In the whole range of medical terminology there is no such *olla podrida* as chorea, which for a century has served as a sort of nosologic pot into which authors have cast, indiscriminately, affections characterized by irregular purposeless movements. With muscular disorder as the salient feature, as the generic character of chorea, there have been scores of specific designations, indicating the quality of the movement, the locality involved, etc. In Foster's Dictionary, ninety-four of these sub-varieties are named."

Our author does very much in this monograph to clear the obscurity in classification, but Bouteille's pessimistic view of the therapeutics of chorea is as nearly true now as when written eighty-four years ago.

The charming style and pleasant method of Dr. Osler make everything he writes entertaining and agreeable, as well as instructive, and this book is no exception to the rule.

The Proceedings of the Fourth Annual Meeting of the Association of Military Surgeons of the United States. Held at Washington, D. C., on May 1, 2 and 3, 1894. Pp. 712. Cloth.

The transactions of this Association have grown from a small volume to a large one, and with that growth there is a corresponding increase in the value of the papers presented. The proceedings of the Association occupy the first place in the volume, after which the papers and discussions follow.

The President's annual address by Professor Senn, was one of those scholarly productions characteristic of that author, on "Abdominal Surgery on the Battle-field." He commends laparotomy for the treatment of internal hemorrhage and dangerous abdominal wounds. The "first aid" should consist in compression over the injured part and auto-transfusion by circular constriction at the base of one or more extremities; the treatment should be prompt; patient at once removed to field hospital, which should be fully equipped. After opening abdomen, temporary compression of aorta should be resorted to if there is much hemorrhage. Venous hemorrhage to be arrested by sponge tampon. Wounds of liver and pancreas should be treated by suture, tampon or actual cautery. Wounds of spleen or kidney may require removal. Wounds of the stomach should be treated the same as wounds of the intestines.

There are many excellent papers in the volume of which a full *résumé* was given by a very competent hand, in this JOURNAL. The volume is well printed on good paper.

A Clinical Manual of Diseases of the Eye, Including a Sketch of Its Anatomy. By D. B. ST. JOHN ROOSA, M.D., LL.D. Octavo, 650 pages, 178 engravings in the text, nearly all original, two full-page chromo-lithographic plates, and a full-page black plate. Bound in muslin at $5.50, and in sheep at $6.50. New York: Wm. Wood & Company. 1894.

The author says in his preface that the work was not written because he "supposed that there were not already in the English tongue many excellent treatises on diseases of the eye. It is presented to the profession because I have not deemed that the debt I owe to it could be even approximately satisfied, nor my own reputation as a teacher, whatever that may be, justly settled, unless I presented in a permanent and accessible form some of the results, with their personal coloring, of my long experience both in the hospital and private practice in ophthalmic disease and therapeutics."

Dr. Roosa has properly judged that the "personal coloring" given to the topics of which he treats, will give his book a wide interest. The opinions of one with such vast opportunities for observation, in this country and in Europe, and of such extensive personal experience can not be a matter of indifference to ophthalmologists, and there is no question of the success of the book.

We note with pleasure the wise conservatism of the author in regard to the use of glasses and muscle cutting. Of school children and their eyes, the author says: "These so-called advances in the methods of teaching, involve excessive use of the eyes under sometimes very unfavorable conditions, that is to say, over desks of inappropriate height for the scholars, in rooms poorly lighted, with air that is sometimes foul for hours. Children are given too many studies to work out at home. It is idle to think that any science can combat such conditions as these. The conditions themselves must be changed, or we shall find a race of myopes and asthenopes growing up where formerly we had strong-eyed people."

The publishers have done their work well and the large clear type gives pleasant evidence that in the making of this book they have profited by Dr. Roosa's dictum that "books should always be well printed." (Page 439.)

Heart Studies, Chiefly Clinical. I. The Pulse Sensations; a Study in Tactile Sphygmology. By WM. EWART, M.D., Cantab., F.R.C.P. Lond., etc., etc. With nearly 200 illustrations. Cl., pp. 486. London: Ballière, Tindall and Cox. 1894. Price, $1.50.

It is refreshing amid the dreary mass of compilations coming to the reviewer's table and books for the issue of which there can be no possible excuse, to meet with a book which displays so much original work and original thought, and it will be found no less interesting to the physiologist than to the clinician. The author thus divides his work into seven parts. The first is preceded by the Introduction which contains two chapters: I, "Tactile Sphygmology and Instrumental Sphygmology: a Retrospect. II, "The Sphygmograph and the Finger; Cause of the Lack of Coöperation

between the two Methods." Part 1 is "General Notions on Pulse, Artery and Tension," and consists of four chapters, viz: I, "What is meant by the Pulse." II, "The Arterial Walls Their Elastic and Muscular Functions. III, "The Arterial Channel Arteries viewed in their Continuity—Pressure Changes and Pulsable Systolic Changes in Arteries." IV, "Elementary Notions of Arterial Tension and Arterial Blood Pressure." Part 2, contains four chapters, viz: I, Anatomical Details in Connection with the Radial Pulse." II, "The Relations of the Radial Artery to the Pressure of the Finger variously applied to the Pulse." III, "The Finger as an Organ of Touch, and the mode of using it to the Pulse." IV, "Elementary Tactile Observations." Part 3 is on "The Rudiments of Tactile Analysis of the Pulse," and contains nine chapters viz: I and II, "Preliminary Explanations." III, "The Tactile Exploration of the Pulse Wave." IV, "The Ictus. V, "The Fundamental Pressure-Experiments conducted with a Single Finger." VI, "The Pulse Sensations when Two or more Fingers are used." VII, "The Proximal, Distal and Intermediate Ictus: Their Direction and Relative Time." VIII, "Modifications of the Pulse caused by Compression of the Artery, or induced by Posture." IX, "The Elementary Study of the Anastomotic Pulse." Part 4 contains fourteen chapters on the wave theory; and the instrumental study of the pulse wave. Part 5 has seventeen chapters of tactile studies. Part 6 has four chapters on the observations and theories of Henry Fouquet, and Part 7 has three chapters giving an epitome of the book, and its final conclusions. The frontispiece is an excellent engraving of Henri Fouquet, who was one of the Faculty of Medicine of Montpellier (1767), and is admitted by our author to be the father of modern tactile sphygmology. "He was the first," says the author, "and he remains the only observer who has bequeathed to us the picture of his own personal tactile judgments."

The book under consideration is one of the most original of the year, and deserves a place in the library of every studious physician and surgeon.

PUBLIC HEALTH.

Test for Well Contamination.—The *Journal d'Hygiène* suggests a simple method of determining whether a privy vault communicates with a well of drinking water. Pour into the vault about a pint of a solution of fluorescin—250 grams to 1,000 grams of water. In a very short time, if any communication exists, the well water will be colored a deep red.

Cremation in France.—Judging from the records of the crematory in Père Lachaise, cremation seems to meet with little favor in France. The crematory was established in 1889, but since then only 810 bodies have been incinerated therein. However, the number is slowly increasing from year to year, as the following figures show: 1889, 49; 1890, 121; 1891, 134; 1892, 159; 1893, 199; 1894, including July, 148.

Microbes on Books and Tickets.—In his inaugural thesis (St. Petersburg, 1894), M. Trouskoliavski gives the results of his bacteriologic study of books used by hospital patients and of hospital visitors' tickets, as sources of microbic contagion. Microbiologic examination of newly-printed tickets and books revealed no microbes, but a similar examination of tickets that had been used, and of books that had been read by patients, showed an average of forty-three bacteria to the square centimeter. While many of these are innocuous, some pathogenic bacteria are found—streptococci, tubercle bacilli, etc.,—and, affixed to the paper surface, these microbes are found to retain their morbific potency for a long time. Placed on dry sterilized paper, Trouskoliavski demonstrated that the comma bacillus remains virulent for from five to fourteen days; the bacillus typhosus for sixty-three days; the Löffler bacillus for thirty-eight days; and the streptococcus for ninety-eight days. The author dwells upon the danger of turning the leaves of such books by moistening the finger or thumb with saliva—but it is a question whether it is worth while to safeguard those who indulge in such a practice under any circumstances.

A Model Quarantine Station.—The Italian Government has just completed and put into commission a model quarantine station at Syracuse in Sicily. An island in the harbor of Syracuse has been taken for the station, which is built on the site of an old fort of the period of Viceroy Don Garcia de Toledo—the latter half of the sixteenth century. The building, over the gateway to which is the inscription "*Salus populi suprema lex*," is described as divided into two parts—on one side a hospital, provided with every modern appliance to secure pure air, proper drainage and the prevention of contagion; on the other the disinfecting rooms. There are a dead-house for the *post-mortems*, a crematory, and a columbarium for the ashes of cremated bodies. Passengers and crews of vessels from suspected ports—mainly of the East—will be taken into the disrobing rooms, one for each sex; there disrobed and their clothing sent through a hatchway to the disinfecting chambers; after thorough bathing they will pass into the dressing rooms, there to await their disinfected clothing, which, meanwhile, has been subjected to a heat of 120 degrees centigrade. Baggage is treated in the same manner and subsequently both persons and baggage—to which access is freely had—are kept under surveillance for the incubative period of the suspected disease. The provision by which is tested the freedom of the baggage from danger of carrying contagion to the point of ultimate destination, is worthy of note.

Does Prevention Prevent?—One of the most distinguished of American physicians is quoted, in a recent uncontradicted newspaper interview, as saying: "In this category [of dangerous contagious diseases] may be included those diseases that the sanitarians are pleased to call 'preventable diseases!' I have yet to find the preventive or any man who has yet found it." Since the eminent speaker then went on almost immediately to controvert his own statement—by attributing the present surpassingly healthful condition of the city which is honored by his residence to a recent municipal scrubbing up and thorough cleansing—he furnished the antidote to whatever of harm his, no doubt inadvertent, sneer at the sanitarians might otherwise have caused among a public which is justly accustomed to receive his utterances as authoritative and final. There is thus little need for referring to the matter save that—by what our colleague of the *Medical Record* styles "a fortuitous combination of items"—the next article which fell under the eye of the JOURNAL described the methods of prevention of the preventable diseases in the *Hospice des Enfants Assistés* or Foundlings' Home of Paris. These methods are too well known to the readers of the JOURNAL to require repetition; but the answer to the query, "Does prevention prevent?"—could not well be given more conclusively than in the simple historical fact that this institution—until within the last two years the greatest clinical field in the world for the study of measles and diphtheria, which had literally raged as epidemics within its walls for more than a quarter of a century causing a frightful mortality—is now deserted by the students of these diseases because they no longer occur among its inmates. Granted the employment of the preventive, there can be no doubt that prevention does prevent what sanitarians call "the preventable diseases."

An International Bureau of Hygiene.—Dr. Zanni, of Constantinople, has submitted to the editor of the *Medical Press* a series of suggestions for the creation of a Central International Bureau of Hygiene with national branches—each branch to be provided with the necessary appliances and

personnel for studying the sources of disease, its development and spread, with especial reference to the prevention of epidemics; the funds necessary for the maintenance of the Central Bureau to be raised by fees for sanitary passports for travelers and by taxes on transport companies and on cattle in transit. The functions of the Bureau, which it is proposed to locate permanently at Berne or Brussels, include the execution of the resolutions adopted by the successive Congresses of Hygiene and the bringing of "the sanitary authorities of the various countries in close and constant communication, its proceedings being embodied in a monthly journal *ad hoc*." At this distance the scheme seems very vague if not visionary. It is not apparent, from the summary of suggestions as published, what authority the Central Bureau or any of the national branches would have to compel travelers to take its sanitary passports or to exact fees therefor, or to levy taxes as indicated; still less what power it could exert to enforce the resolutions adopted by the International Congress. Nor does the *Press* seem at all sanguine of the realization of Dr. Zanni's project, although it has a motive for desiring it which sanitarians in this country can, happily, only partly appreciate. That motive is sufficiently indicated in the following comment: "One of the first steps [of the Central International Bureau] would be to compile rules for the organization of sanitary congresses, international and national, with a view to restricting membership to persons duly qualified to take part in the deliberations and to shut out the troublesome contingent of picnic members whose idea of hygiene is 'high jinks.' Then, and only then, will the decisions arrived at by the members in solemn conclave assembled have weight and value. A sanitary congress must be a meeting of experts and not an aggregation of faddists and rank outsiders, if it is to command the respect of governments and peoples, and the first duty of the International Bureau, if ever it comes into existence, will be to legislate accordingly."

Epidemic Contagious Diseases.—Diphtheria and scarlet fever have both markedly increased during the past week; isolation hospitals have been opened in many localities in consequence and some are already overcrowded; this has been the case for some time in Boston, where it is reported that three or four cots are placed in the private rooms intended for only one patient each and new admissions are refused daily. The first shipment of antitoxin, manufactured in this country, was recently made by Dr. Paul Gibier, Director of the Pasteur Institute in New York, to the Board of Health of New Orleans, where diphtheria has been "raging" for more than a month; a subsequent shipment was made to Toronto. A public subscription has been started by the press of New Orleans for the purchase of the serum and the establishment of a laboratory for its production. Consul-General Charles DeKay reports from Berlin that the demand for the remedy is so great that the hospitals could not be supplied recently, notwithstanding forty horses are used for its production in one establishment alone; as a result the hospital mortality of children under 4, which had been reduced to 11 per cent. in September, rose to 60 per cent. in October. —After repeated contradictory statements in the newspapers for and against the oyster industry, Dr. C. A. Lindsley, Secretary of the Connecticut State Board of Health, reports, as the result of his investigation of the recent outbreak of illness among the students of the Wesleyan College at Middletown, that the disease is unquestionably typhoid fever, caused by eating oysters taken near the outlet of a sewer in the Quinnipiac River; twenty cases resulted among those who partook of these infected oysters, including a student from Yale and one from Amherst; two of the Wesleyan students are dead and three of the surviving eighteen are critically ill.—The anticipated recrudescence of smallpox to epidemic proportions with the advent of cold weather has not thus far materialized; the number of cases in Milwaukee and Chicago remains about stationary; on the 20th inst. there were 106 cases in the former city as against 107 one week previous and 58 in Chicago as against 57 one week previous. The cases traced to the concealed case in the grocer's shop in New York, reported in last week's JOURNAL, have given some trouble, by causing a second crop, but the health authorities believe they have now run them all down and that further spread from this source is unlikely. The situation at present speaks well for our municipal sanitary administrations in dealing with this disease under the many handicaps of concealment of cases, opposition to vaccination and resistance to necessary measures of restriction and suppression. An object-lesson in these difficulties is furnished in the story of a recent introduction of the disease into the town of Deerfield, Ohio. A "faith-curist," named Hazzard, while in New York, visited a smallpox patient and treated the case by the "faith cure" methods; returning to Deerfield he promptly developed a well-marked attack of variola, but concealed his condition and refused medical attendance until an unknown number of persons had been exposed.

MISCELLANY.

Change of Address.—Dr. H. A. Kelly has removed to 1406 Eutaw Place, Baltimore, Md.

Progressive Astigmatism.—By an inadvertence which we regret, the Table of Contents last week failed to include the excellent paper of Dr. W. T. Montgomery, of Chicago, on "Progressive Astigmatism."

Appointments.—Dr. A. M. Hurd, for the past year First Assistant Physician of the Buffalo State Hospital has been appointed Superintendent of that institution.

Dr. Augustus H. Buckmaster, has accepted the Chair of Practice of Medicine in the University of Virginia.

New Antidote for Prussic Acid.—M. Johann Antal, a Hungarian chemist, has produced a new compound—the nitrate of cobalt—which is claimed to be a very efficacious antidote in cases of poisoning by cyanid of potash or prussic acid. Used first experimentally with animals, it has been since employed in upward of forty cases of accidental poisoning by the cyanid, and always with success.

Another "Gold Cure" Victim.—An inquest, resulting in a verdict of "death from alcoholism," was held in Chicago on the 12th inst. The victim—a commercial traveler named Dresser—was discharged "cured" from a Keeley Institute about three years since and, for a time, was one of the "star" cures. This makes the sixth or seventh "post" held in that city, within a few months, on "graduates of the gold cure." It might be worth while to gather up the statistics of this kind for the country at large.

Cigarette-Roller's Cramp.—To the already long list of professional palsies—the writers', pianists', typists', milkers', *et al.*,—is now to be added the cigarette-rollers' cramp. It is reported to be very frequent in Spain and to be appearing in France. After a few months work the girls, who roll the cigarettes in those countries, are obliged to cease their occupation—sometimes permanently. They experience intense pain in the joints of their hands and fingers and are often unable for some time to approximate the thumb and index finger.

Honors for Dr. Yersin.—The nomination of Dr. Yersin, Colonial Medical Officer of the second class, to the rank of Chevalier of the Legion of Honor is announced in the official journal of France. After acting as Professor Roux's assistant at the Pasteur Institute for four years, Dr. Yersin proceeded to Hong Kong under a commission from the Minister for the Colonies. His labors there during the plague and in connection with the discovery of the microbe of the pest are well known.

Bequests to Hospitals.—Under the will of the late Edwin J. Leisenring the following named institutions have been remembered with special bequests: The Pennsylvania Hospital of Philadelphia and St. Luke's Hospital of South Bethlehem. They will each receive $10,000.

Leprosy among African Natives.—A writer in the *Illustrated Africa* states that he has had experience with one hundred cases of leprosy among African negroes, and they were all among males with one exception. The greater degree of cleanliness among African women than among the males is a point of marked difference. The men are too busy to go to the stream and wash. The women need to go to the water daily for their culinary and other purposes, so that it is easy for them to step into the stream before filling their waterpots. Hence at the expense of large average outlay of time in bathing the female is comparatively exempt. The writer finds that fish is an article of diet with many of these African races. The element of heredity does not appear to prevail in their etiology, but the testimony on nice points of this nature is not always accessible, and much that is attempted to be given is unintelligent and unreliable.

Denver Home for Consumptives.—Under the auspices of the Bishop and Chapter of the Episcopal diocese of Colorado, a home for consumptives is in a fair way to be established in Denver, to which physicians may send their patients in modest circumstances who would be benefited by residence in that climate. The establishment will consist of three separate buildings, one to be occupied exclusively by men, one exclusively by women and the third by mothers with their sons, husbands with their wives and brothers with their sisters, at a cost of $5 per week for each person—this charge covering board, lodging and medical attendance. It is hoped by this semi-charity to make the climatic advantages of Colorado available to a class of consumptives who are now debarred by reason of the cost of living in Denver and vicinity. There will be accommodations for 216 patients; the medical attendant will be Dr. Samuel A. Fisk, a graduate of Yale and of the Harvard Medical School; the Rev. Frederick W. Oates, rector of All Saints' Church in Denver, will have the direct management and is now in New York securing the necessary funds—to which one lady has subscribed the entire amount requisite to erect the main central building and another lady and a gentlemen have contributed the sum necessary for one of the two other buildings.

Domestic Medicine in the Tennessee Mountains.—A writer in the *Independent*, recruiting in Cloudland, Eastern Tennessee, gives a sketch of the indigenous resources of the hardy mountaineers of that section, when they happen to think that they are not so robust as usual. There is a great paucity of medical diplomas in that section, and principally for the very good reasons that there are neither ill-health or filthy lucre in paying quantities. The writer is a clergyman, and seems to be greatly amused at the many uses to which the ground-hog is put *post-mortem* by the mountain-people. The reference to phthisis, in the paragraph given below, must be held to refer to the few imported cases that reach that country, and not to cases originating therein; the latter are almost, if not entirely, unknown:

"In the helplessness of cultivated communities the family doctor is indispensable. But the natural man finds it easy to doctor himself. With 'balsam juice,' the resinous deposit in the bark of *Abies Fraseri*, he cures nearly everything, both outside and inside. The virtues of sarsaparilla and ginseng (the *Aralias*) are understood. Said a mighty Nimrod: 'Ef yer hev side pleurisy, an' yer side is swole up es big es yer hand, put ground-hog ile on it three nights right handrunnin.' (And here is *Actomys monax* once more.) Slippery elm (*Ulmus fulva*) helps a bad throat. 'Ramp' (*Allium tricoccum*), though fatal to milk and butter, relieves phthisis. The woods are full of poultices and bitter tonics. Armed with his knife, our mountaineer is capable of heroic surgery, both for his neighbors and himself. Unfortunately, he is apt to have an exaggerated estimate of the medical virtues of 'corn juice,' which too frequently flows from a moonlight still."

Hospital Notes.

The Chambers Street Hospital, New York.—This emergency institution in New York City is no more. The last patients were discharged or removed on the 7th inst. A new House of Relief has been established at Nos. 67 and 69 Hudson Street, and is now conducted as a branch of the New York Hospital. It is appointed and equipped with all the best modern improvements and is the equal of any institution of its kind in the world, inclusive of an ambulance station especially designed for emergency work.

Washington Notes.

The District Medical Society.—At the regular meeting of the Society held on the 14th inst., Dr. Henry A. Robbins read a very elaborate essay on syphilis, and Dr. J. W. Bovee presented the specimens and read the history of a case of dermoid cyst, pyosalpinx and double ovarian abscess.

Washington Obstetrical and Gynecological Society.—The two hundred and seventeenth meeting of the Society was held on the 16th inst. Dr. H. D. Fry gave the history of a successful case of Cæsarean section and presented the mother and child. He also gave the history of a case of symphyseotomy, and presented the patient who has made a perfect recovery. The regular paper of the evening was read by Dr. Wm. M. Sprigg, entitled a "Case of Double Vagina and Uterus." Dr. W. P. Carr related the history of a case of double uterus with unilateral pregnancy and removal of decomposed fetus and secundines. A very full discussion followed on the different subjects and was participated in by a large number of the members.

Smallpox.—There are five new cases of smallpox in the District this week—all traced to the first case (the Coston child). One of the five was not detected until it had recovered and infected three persons in the family in which it occurred and the convalescent had left the city, visited Gainsville, Nacooche, Winder and Athens, Ga. The patient is now believed to be on the return trip home. A lady friend after exposure in the same family is visiting Augusta, Ga. The health officer there has been notified by telegraph. A volunteer nurse at the hospital contracted the disease and died on the 19th inst.

Death from Hydrophobia.—The four-year-old daughter of F. G. McDermatt residing in Georgetown, D. C., was bitten by a strange dog, about nine weeks ago. The wound was treated by a regular physician and healed promptly. All fears of hydrophobia were at rest until the 11th inst., when she was taken violently ill with rabies, and died in agony on the 14th. A dog which was bitten at the same time has since developed the disease.

The Home for Incurables.—This worthy institution which is more of a necessity than a hospital, and as usual with charitable institutions is very short of funds, has decided to hold a tea in the near future. After years of usefulness they find themselves possessed of forty inmates to cure and $2.48 in the treasury. Congress makes no appropriation for this hospital and they care for helpless and hopelessly diseased persons hailing from every section of the United States.

Louisville Notes.

Falls City Medical Society.—Dr. Frank reported the case of a woman upon whom a double ovariotomy had been done, and in whom there developed a fecal fistula seven weeks after the operation. Through this fistula only a few particles of fecal matter passed, but a great deal of gas, and later, seven lumbricoides worms made their exit from the bowel through the fistula. Four months after the operation a subsequent operation was done for the closure of the fistula. The case was reported because of the unusual interest attached to it on account of the passage of the worms from the bowel through the fistula.

ACADEMY OF MEDICINE.—As previously reported through these columns, a society of this name was formed at the meeting held on the evening of the 10th inst. The former effort proved unsuccessful on account of the financial question. After much discussion it was decided that it would not be successful if the Academy met in rented quarters, so the only plan which suggested itself as feasible was to procure from thirty doctors $300 each, in $100 yearly payments, with which the building suitable for the purpose was to be purchased and furnished. Many meetings looking to an organization were held, and all but one or two of the requisite number of subscribers secured; a constitution was adopted and all seemed well until the advent of summer, when the enthusiasm died out and the matter was dropped. The meeting held on the 10th inst. was for the purpose of endeavoring to rescue the Academy, and as the other efforts had failed it was decided to raise only sufficient funds to rent a suitable hall and to furnish it. Temporary officers were elected to serve until January 1, as follows: President, Dr. T. L. McDermott; Vice-President, Dr. F. C. Simpson; Secretary, Dr. J. L. Howard; Treasurer, Dr. J. M. Ray. A commodious hall has been rented in the Columbia Building on the sixth floor; it will soon be furnished, and it is to be hoped that the profession at large will take an active interest in the movement.

VACCINATION LAW.—The following is a copy of the letter sent by the Health Officer to the superintendents and teachers of the schools of the city:

"Your attention is called to Sec. 42, P. 673 of the City Code, viz: No principal of any school, and no principal or teacher of any private, sectarian or other school, shall admit to any such school such child or minor who shall not have been vaccinated, etc.," and "That every person being the guardian or having the care, custody or control of any minor or other individual, except such as have had smallpox or varioloid, shall cause and procure such minor or individual to be so promptly, frequently and effectively vaccinated that such minor or individual shall not take or be liable to take the smallpox. Any person violating this section shall be liable to a fine in the city court of not less than $10 nor more than $20, and shall also be liable to a like fine for every ten days thereafter they shall delay having the operation of vaccination performed."

FOOTBALL.—A serious accident occurred in a game between the Louisville Male High School and the Manual Training School last week. One of the players on the former team sustained a fracture of both bones of one of his legs while on the bottom of a pile of players in a scrimmage. He was removed from the field and a substitute played in his place. The other injuries sustained by the players were trivial.

JOHN N. NORTON MEMORIAL INFIRMARY.—One of the most valuable as well as deserving institutions of this city is the John N. Norton Memorial Infirmary. This infirmary (or hospital) owes its name to a former and much beloved clergyman of the Protestant Episcopal Church in this city, whose widow made a large contribution to it, and by means of this and other but smaller contributions, sufficient means were accumulated to justify the erection of the handsome and spacious four-story building upon the purchased lot at the corner of Third and Oak Streets, one of the most beautiful and quiet residence locations in the city.

The infirmary was first opened for business in the month of December, 1885, since which period it has been liberally patronized by the sick and afflicted, not only of this city and State, but its influence for good has been felt in several other States from which many patients have been sent to the infirmary for treatment.

The furnishings of apartments, laundry, kitchen, offices and operating rooms have been thorough and in the best manner, and these details of arrangement have been made with a completeness that compares most favorably with older and richer establishments; the appointment of the patients' rooms is even luxurious.

The skilful architecture of the building secures perfect ventilation in all its parts and affords ample light to every department. Each has an attractive outlook, and a cheerful view of agreeable surroundings. There is electric communication between all parts of the house and speaking tubes on each floor. There is also a fire alarm in the building. Open fires are used in the patients' rooms and the halls are thoroughly warmed by an approved heating apparatus.

The managers have been most fortunate in securing the services of Miss N. Gillette, of New York, as Superintendent. Her training and experience have been in the best schools and hospitals, and she has sustained the reputation of her former employments. Attached to the infirmary is an efficient corps of trained nurses. In addition to their usual duties at the infirmary, nurses have from time to time been supplied to patients at their homes. In connection with the infirmary the management maintains a training school for nurses; the pupils are under the instruction of the superintendent and have the advantage of practical experience in all the details of nursing the sick, and in addition to this have a regular course of lectures delivered to them by a staff of physicians and surgeons of the city.

The infirmary is conducted by a board of lady managers duly elected by the vestries of the various Protestant Episcopal Churches of the city, but it is non-sectarian in its management, its doors are open equally alike to persons of all creeds or of no creed whatever, and it is the privilege of patients to employ whatever physician or clergyman they may prefer, uninfluenced by the managers.

The prices for board and rooms are considered low as compared with similar institutions in other cities.

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Nov. 10, 1894, to Nov. 16, 1894.

Capt. BENJAMIN L. TEN EYCK, Asst. Surgeon, is granted leave of absence for one month.

First Lieut. FRANCIS A. WINTER, Asst. Surgeon, leave of absence granted in S. O. 71, Dept. of Texas, July 25, 1894, is extended one month. By direction of the Secretary of War.

Capt. EUGENE L. SWIFT, Asst. Surgeon, leave of absence granted in S. O. 147, Dept. of Dakota, Oct. 11, 1894, is extended one month. By direction of the Secretary of War.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending Nov. 17, 1894.

Medical Inspector J. M. FLINT, detached from the U. S. S. "Baltimore," home and three months' leave.

Surgeon C. U. GRAVATT, ordered to the U. S. S. "Charleston," per steamer Dec. 4, 1894.

Surgeon J. A. HAWKE, detached from the U. S. S. "Charleston," and to the U. S. S. "Baltimore."

Asst. Surgeon J. S. HOPE, ordered to the U. S. R. S. "Franklin."

Asst. Surgeon W. H. BARNUM, detached from U. S. R. S. "Franklin," and to the New York Navy Yard.

P. A. Surgeon M. F. GATES, ordered to the U. S. R. S. "Richmond."

Medical Inspector G. R. BRUSH, ordered before Retiring Board at New York, Nov. 17, 1894.

Surgeon L. G. HENEBERGER, detached from Marine Rendezvous, and continue special duty in New York.

Surgeon J. M. STEELE, detached from League Island Navy Yard, and to Marine Rendezvous, New York.

P. A. Surgeon W. H. RUSH, detached from Naval Academy, and to the League Island Navy Yard.

P. A. Surgeon A. M. D. MCCORMICK, ordered to the Naval Academy, Annapolis, Md.

LETTERS RECEIVED.

Alford, J. M., New Orleans, La.; Allport, Frank, (2) Minneapolis, Minn.; Allen, E. P., Athens, Pa.

Bailey, C. William, Georgetown, S. C.; Barnes, J. Steele, Milwaukee, Wis.; Breaux, T. W., New Orleans, La.

Cokenower, J. W., Des Moines, Iowa; Crockett, A. R., Boston, Mass.; Chambers, J. H. & Co., St. Louis, Mo.; Coates, Truman, Russelville, Pa.; Cockey, Chas. H., Baltimore, Md.; Chaddock, C. G., (2) St. Louis, Mo.; Caldwell, J. J., Baltimore, Md., Cutter John A. New York, N.Y.

Detroit Metric Granule Co., (2) Detroit, Mich.; Damrell & Upham, Boston, Mass.; Daggett Table Co., Buffalo, N. Y.

Ewing, F. C., New Orleans, La.; Evans, B. D., Morris Plains, N. J.; Emley, G. H., Hillsborough, N. H.; Evans, W. A., Chicago, Ill.

Fougera, E. & Co., New York, N. Y.

Guild, C. H., & Co., Boston, Mass.; Gardner, R. W., New York, N. Y.; Givens, Jno. W., Blackfoot, Idaho.

Hartwig, C. W., Baltimore, Md.; Hummel, A. L., Philadelphia, Pa.

Jeffery, Alicia F., Denver, Col.; Jungblut, H. C., Tripoli, Iowa; Jasbre, J. T., Smithsburg, Md.

Kidder, Jerome Mfg. Co., New York, N.Y.

Lehn & Fink, New York, N. Y; Lowdermilk, W. H. & Co., Washington, D. C.; Lea Brothers & Co., Philadelphia, Pa.

Murphy, Garrett, Garden City, Minn.; McArthur Hypophosphite Co., Ansonia, Conn.; Martin, F. H., Chicago, Ill.; Monmonier, John N., Baltimore, Md.; Mills, H. R., Port Huron, Mich.; MacMonagle, B., San Francisco, Cal.

Newman, H. P., Chicago, Ill.; Nicholson, W. T. Pittsburg, Pa.

Ottilie, Chas., La Crosse, Wis.; Osler William, Baltimore, Md.; Powers, M. I., Iowa Falls, Iowa; Pantagraph Ptg. & Sty. Co., Bloomington, Ill.; Pennington, John I., Baltimore, Md.; Parsons, O. M., Rosby's Rock, W. Va.

Reed, R. C. Stockton, Santa Fe Springs, Cal.; Rudy, Martin, Lancaster, Pa.; Raymer, C. D. Co., Minneapolis, Minn.; Rumford Chemical Works, Providence, R. I.

Thompson, May Harris, Chicago, Ill.

Steele, D. A. K., Chicago, Ill.; Scott, T. A., Baker City, Ore.; Stearns, Frederick & Co., Detroit, Mich.; Shank, Abram, Clearspring, Md.; Starr, J. N., Snohomish, Wash.; Sellman, W. A. B., Baltimore, Md.

Vetter, J. C., & Co., New York, N. Y.

Waite & Bartlett Mfg. Co., New York, N. Y.; Wyckoff, R. M., Brooklyn, N. Y.; Wandles, H. W., Dallas, Texas; Wescott, C. D., Chicago, Ill.

Yost, W. M. McLean, Baltimore, Md.